SAFETY DATA SHEET

1. Identification

Product identifier **Ethyl alcohol, anhydrous**

Other means of identification

CAS number 64-17-5

Synonyms Ethanol, Absolute ethanol, Alcohol (anhydrous), Ethyl alcohol 200 proof

Recommended use General purpose solvent.

Recommended restrictions Refer to the alcohol control authority in which the product is to be used - Canada Revenue Agency (Excise) in Canada, US Tax and Trade Bureau in the US, etc.

Manufacturer/Importer/Supplier/Distributor information

Company name Greenfield Global Inc.

Address 6985 Financial Drive
Missisauga, Ontario L5N 0G3
Canada

Telephone (905) 790-7500

Website http://www.greenfield.com

24-Hour Emergency Contact: CHEMTREC: 1-800-424-9300

2. Hazard identification

Physical hazards Flammable liquids Category 2

Health hazards Serious eye damage/eye irritation Category 2

Label elements

Signal word Danger

Hazard statement Highly flammable liquid and vapour. Causes serious eye irritation.

Precautionary statement

Prevention Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. 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. In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

Storage Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental information None.

Other hazards None known.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Ethyl alcohol		64-17-5	100

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Headache. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Coughing.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information
Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
Highly flammable liquid and vapour.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up
Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions
Avoid discharge into drains, water courses or onto the ground.

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. When using do not smoke. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid contact with eyes. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values (TLV)

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	STEL	1000 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	TWA	1880 mg/m3
		1000 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	STEL	1000 ppm

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	STEL	1000 ppm

Canada. New Brunswick OELs: Threshold Limit Values (TLVs) Based on the 1991 and 1997 ACGIH TLVs and BEIs Publication (New Brunswick Regulation 91-191)

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	TWA	1880 mg/m3
		1000 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	STEL	1000 ppm

Canada - Quebec

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	STEL	1000 ppm

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended

Material	Type	Value
Ethyl alcohol (CAS 64-17-5)	15 minute	1250 ppm
	8 hour	1000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation 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. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Butyl rubber or Viton® gloves are recommended. Other suitable gloves can be recommended by the glove supplier. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

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. Respirator type: Chemical respirator with organic vapour cartridge and full facepiece.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Colour	Clear liquid; invisible vapour.
Odour	Sweet. Alcohol-like.
Odour threshold	0.1 - 5100 ppm Approximate
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	78.33 °C (173 °F)
Flash point	12.8 °C (55.04 °F) Closed cup
Evaporation rate	May evaporate quickly.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	3.3 %
Explosive limit – upper (%)	19 %
Vapour pressure	59.5 hPa (20 °C (68 °F))
Vapour density	1.6
Relative density	0.785 g/ml (25 °C (77 °F))
Solubility(ies)	
Solubility (water)	Completely soluble.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	363 °C (685.4 °F)
Decomposition temperature	Not pertinent
Viscosity	Not available.
Other information	
Molecular formula	C2-H6-O
Molecular weight	46.07 g/mol
Oxidising properties	Not oxidising.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	Carbon dioxide (CO2).

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Headache. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Coughing.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
Ethyl alcohol (CAS 64-17-5)		
Acute		
Inhalation		
Vapour		
LC50	Rat	117 - 125 mg/l, 4 Hours
Oral		
LD50	Rat	10470 mg/kg

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitisation	
Respiratory sensitisation	Not a respiratory sensitiser.
Skin sensitisation	This product is not expected to cause skin sensitisation.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

Canada - Manitoba OELs: carcinogenicity

Ethyl alcohol (CAS 64-17-5)	Confirmed animal carcinogen with unknown relevance to humans.

Reproductive toxicity	Possible reproductive hazard.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is 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.

Product		Species	Test Results
Ethyl alcohol (CAS 64-17-5)			
Aquatic			
Algae	EC10	Freshwater algae	11.5 mg/l, 72 hours
	EC50	Freshwater algae	275 mg/l, 72 hours
		Marine water algae	1900 mg/l
	NOEC	Marine water algae	1580 mg/l
Fish	LC50	Freshwater fish	11200 mg/l, 24 hours
	NOEC	Freshwater fish	250 mg/l

Product		Species	Test Results
Invertebrate	EC50	Freshwater invertebrate	5012 mg/l, 48 hours
		Marine water invertebrate	857 mg/l, 48 hours
	NOEC	Freshwater invertebrate	9.6 mg/l, 10 days
		Marine water invertebrate	79 mg/l, 96 hours
Other	EC50	Lemna minor	4432 mg/l, 7 days
	NOEC	Lemna minor	280 mg/l, 7 days
Other			
Micro-organisms	LC50	Micro-organisms	5800 mg/l, 4 hours
Terrestrial			
Plant	EC50	Terrestrial plant	633 mg/kg dw

Persistence and degradability Expected to be readily biodegradable.

Bioaccumulative potential Potential to bioaccumulate is low.

Mobility in soil Expected to be highly mobile in soil.

Other adverse effects No data available.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

UN number UN1170

UN proper shipping name ETHANOL

Transport hazard class(es)

Class 3

Subsidiary risk -

Packing group II

Environmental hazards No.

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number UN1170

UN proper shipping name Ethanol

Transport hazard class(es)

Class 3

Subsidiary risk -

Label(s) 3

Packing group II

Environmental hazards No

ERG Code 3L

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1170

UN proper shipping name ETHANOL

Transport hazard class(es)

Class 3

Subsidiary risk -

Label(s) 3

Packing group	II
Environmental hazards	
Marine pollutant	No
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	This product is a liquid and when transported in bulk is covered under MARPOL 73/78 Annex II. This product is listed in the IBC Code. Pollution category: Z

15. Regulatory information

Canadian regulations

This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date	01-February-2021
Revision date	16-October-2023
Version No.	03

Disclaimer

This product is subject to Greenfield Global Inc.’s terms and conditions, which can be found at http://www.greenfield.com/tc-po-can/. The information in this SDS is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. The information in this safety data sheet must be regarded as a description of the safety requirements relating to the material and not as a guarantee of the properties thereof. No warranty guarantee or representation is made to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy itself as to the suitability of such information for its own particular use. This information relates only to the specific product designated and may not be valid for such product used in combination with any other materials or in any process. It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations applicable to the use, storage, or handling of the product. THE COMPANY MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF PERFORMANCE, OR USAGE OF TRADE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. Given the variety of factors that can affect the use and application of the product, which are uniquely within the user's knowledge and control, it is essential that the user evaluate the product to independently determine whether it is fit for a particular purpose, suitable, safe, and/or lawful for user's method of use or application.