

# SAFETY DATA SHEET

## 1. Identification

<b>Product identifier</b>	<b>DA-2C (Anhydrous)</b>
<b>Other means of identification</b>	
<b>Synonyms</b>	Denatured alcohol automotive fuel grade denatured with gasoline
<b>Recommended use</b>	Component of oxygenated automotive fuel gasoline.
<b>Recommended restrictions</b>	Not potable
<b>Manufacturer/Importer/Supplier/Distributor information</b>	
<b>Company name</b>	Greenfield Global Inc.
<b>Address</b>	6985 Financial Drive Mississauga, Ontario L5N 0G3 Canada
<b>Telephone</b>	(905) 790-7500
<b>Website</b>	<a href="http://www.greenfield.com">http://www.greenfield.com</a>
<b>24-Hour Emergency Contact:</b>	CHEMTREC: 1-800-424-9300

## 2. Hazard identification

<b>Physical hazards</b>	Flammable liquids	Category 2
<b>Health hazards</b>	Serious eye damage/eye irritation	Category 2A
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1B
	Reproductive toxicity	Category 2
<b>Environmental hazards</b>	Hazardous to the aquatic environment, acute hazard	Category 3
	Hazardous to the aquatic environment, long-term hazard	Category 3

### Label elements



<b>Signal word</b>	Danger
<b>Hazard statement</b>	Highly flammable liquid and vapour. Causes serious eye irritation. May cause genetic defects. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. Harmful to aquatic life with long lasting effects.
<b>Precautionary statement</b>	
<b>Prevention</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
<b>Response</b>	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 exposed or concerned: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. In case of fire: Use water fog, alcohol-resistant foam, dry chemical powder, carbon dioxide to extinguish.
<b>Storage</b>	Store in a well-ventilated place. Keep cool. Store locked up.

<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Supplemental information</b>	None.
<b>Other hazards</b>	None known.

### 3. Composition/information on ingredients

#### Mixtures

Chemical name	Common name and synonyms	CAS number	%
Ethanol		64-17-5	94 - < 99
Pentane		109-66-0	0.8 - < 3
Natural Gasoline		8006-61-9	0.6 - < 2
Other components below reportable levels			< 2

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

### 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Call a physician if symptoms develop or persist.
<b>Skin contact</b>	Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists.
<b>Eye contact</b>	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.
<b>Ingestion</b>	Rinse mouth. Get medical attention if symptoms occur.
<b>Most important symptoms/effects, acute and delayed</b>	Headache. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Coughing.
<b>Indication of immediate medical attention and special treatment needed</b>	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.
<b>General information</b>	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	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.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	Highly flammable liquid and vapour.

### 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	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.
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**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. Prevent product from entering drains.

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. Put material in suitable, covered, labelled containers. For waste disposal, see section 13 of the SDS.

**Environmental precautions**

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

**7. Handling and storage****Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

**Conditions for safe storage, including any incompatibilities**

Store locked up. 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)**

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Pentane (CAS 109-66-0)	TWA	1000 ppm

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

Components	Type	Value
Ethanol (CAS 64-17-5)	TWA	1880 mg/m <sup>3</sup>
		1000 ppm
Pentane (CAS 109-66-0)	TWA	1770 mg/m <sup>3</sup>
		600 ppm

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

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Pentane (CAS 109-66-0)	TWA	1000 ppm

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

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Pentane (CAS 109-66-0)	TWA	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)**

Components	Type	Value
Ethanol (CAS 64-17-5)	TWA	1880 mg/m <sup>3</sup>

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

Components	Type	Value
Pentane (CAS 109-66-0)	STEL	1000 ppm
		2210 mg/m <sup>3</sup>
	TWA	750 ppm
		1770 mg/m <sup>3</sup>
		600 ppm

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

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Pentane (CAS 109-66-0)	TWA	1000 ppm

**Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)**

Components	Type	Value
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Natural Gasoline (CAS 8006-61-9)	STEL	1480 mg/m <sup>3</sup>
		500 ppm
	TWA	890 mg/m <sup>3</sup>
Pentane (CAS 109-66-0)	TWA	300 ppm
		1000 ppm

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

Components	Type	Value
Ethanol (CAS 64-17-5)	15 minute	1250 ppm
	8 hour	1000 ppm
Pentane (CAS 109-66-0)	15 minute	750 ppm
	8 hour	600 ppm

<b>Biological limit values</b>	No biological exposure limits noted for the ingredient(s).
<b>Appropriate engineering controls</b>	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.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye/face protection</b>	Wear safety glasses with side shields (or goggles). Chemical goggles are recommended.
<b>Skin protection</b>	
<b>Hand protection</b>	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.
<b>Other</b>	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
<b>Respiratory protection</b>	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. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.
<b>General hygiene considerations</b>	Observe any medical surveillance requirements. 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	Colourless.

**Odour** Gasoline-like.

**Odour threshold** 0.1 - 5100 ppm (for Ethanol) Approximate

**pH** 6.8 (ASTM D6423)

**Melting point/freezing point** < -80 °C (< -112 °F) (ASTM D5972)

**Initial boiling point and boiling range** 61.7 °C (143.06 °F) (ASTM D1078)

**Flash point** < 10 °C (< 50 °F) Tag closed cup (ASTM D 56)

**Evaporation rate** 2.3 (Butyl acetate = 1)

**Flammability (solid, gas)** Not applicable.

### Upper/lower flammability or explosive limits

**Explosive limit - lower (%)** 3.3 (for Ethanol)

**Explosive limit – upper (%)** 19 (for Ethanol)

**Vapour pressure** 5.87 kPa Ethanol (20 °C (68 °F))

**Vapour density** 1.7 (Air = 1)

**Relative density** 0.7867 (20 °C (68 °F))

### Solubility(ies)

**Solubility (water)** Partial

**Partition coefficient (n-octanol/water)** 0.032 Approximate

**Auto-ignition temperature** 422 °C (791.6 °F) Approximate

**Decomposition temperature** Not available.

**Viscosity** 1.35 cP (20 °C (68 °F)) estimated

### Other information

**Kinematic viscosity** 1.481 mm<sup>2</sup>/s (20 °C (68 °F))

**Oxidising properties** Not oxidising.

**Percent volatile** 100 % v/v

## 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** No dangerous reaction known under conditions of normal use.

**Conditions to avoid** Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

**Incompatible materials** Strong oxidising agents.

**Hazardous decomposition products** Carbon dioxide (CO<sub>2</sub>).

## 11. Toxicological information

### Information on likely routes of exposure

**Inhalation** Prolonged inhalation may be harmful.

**Skin contact** No adverse effects due to skin contact are expected.

**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** Not expected to be acutely toxic.

<b>Components</b>	<b>Species</b>	<b>Test Results</b>
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Ethanol (CAS 64-17-5)

**Acute****Inhalation**

*Vapour*

LC50 Rat 117 - 125 mg/l, 4 Hours

**Oral**

LD50 Rat 10470 mg/kg

Pentane (CAS 109-66-0)

**Other**

NOAEL Rat > 1000 mg/kg/day

**Acute****Dermal**

LD50 Rabbit 3000 mg/kg/day

**Inhalation**

LC50 Rat 18 mg/l, 4 Hours

**Oral**

LD50 Rat > 2000 mg/kg/day

**Chronic****Other**

NOAEL Rat 20 mg/l

**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** May cause genetic defects.

**Carcinogenicity** Suspected of causing cancer.

**Canada - Manitoba OELs: carcinogenicity**

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

**Canada - Quebec OELs: Carcinogen category**

Natural Gasoline (CAS 8006-61-9) Detected carcinogenic effect in animals.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Natural Gasoline (CAS 8006-61-9) 2B Possibly carcinogenic to humans.

**Reproductive toxicity** Suspected of damaging fertility or the unborn child.

**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. Prolonged exposure may cause chronic effects.

**12. Ecological information**

**Ecotoxicity** Harmful to aquatic life with long lasting effects.

Components	Species		Test Results
Ethanol (CAS 64-17-5)			
<b>Aquatic</b>			
Algae	EC10	Freshwater algae	11.5 mg/l, 72 hours
	EC50	Freshwater algae	275 mg/l, 72 hours
Fish	LC50	Freshwater fish	11200 mg/l, 24 hours
	NOEC	Freshwater fish	250 mg/l
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
<b>Other</b>			
Micro-organisms	LC50	Micro-organisms	5800 mg/l, 4 hours
<b>Terrestrial</b>			
Plant	EC50	Terrestrial plant	633 mg/kg dw Terrestrial, plants
Pentane (CAS 109-66-0)			
<i>Acute</i>	EC50	Selenastrum capricornutum (new Pseudokirchneriella subcapita)	7.51 mg/l, 72 Hours
<b>Aquatic</b>			
<i>Acute</i>			
Crustacea	EC50	Daphnia magna	2.7 mg/l, 48 Hours
Fish	LC50	Oncorhynchus mykiss	4.26 mg/l, 96 Hours

**Persistence and degradability** No data is available on the degradability of any ingredients in the mixture.

#### Bioaccumulative potential

##### Partition coefficient n-octanol / water (log Kow)

DA-2C (Anhydrous)	0.032, Approximate
Ethanol (CAS 64-17-5)	-0.35
Pentane (CAS 109-66-0)	3.39

**Mobility in soil** No data available.

**Other adverse effects** The product contains volatile organic compounds which have a photochemical ozone creation potential.

### 13. Disposal considerations

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. 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

<b>UN number</b>	UN3475
<b>UN proper shipping name</b>	ETHANOL AND GASOLINE MIXTURE

**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** UN3475  
**UN proper shipping name** Ethanol and gasoline mixture with more than 10% ethanol  
**Transport hazard class(es)**  
**Class** 3  
**Subsidiary risk** -  
**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** UN3475  
**UN proper shipping name** ETHANOL AND GASOLINE MIXTURE  
**Transport hazard class(es)**  
**Class** 3  
**Subsidiary risk** -  
**Packing group** II  
**Environmental hazards**

**Marine pollutant** No.

**EmS** F-E, S-E

**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 substance/mixture is not intended to be transported in bulk.

**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



Country(s) or region	Inventory name	On inventory (yes/no)*
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)	No
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** 18-October-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.