Safety Data Sheet

MSDS: ETHANOL

Date Issued: 26 September 2016

SECTION 1: IDENTIFICATION OF MATERIAL AND SUPPLIER

Product Name:	Ethanol
Other Names:	Methylated Spirits, Denatured Absolute Alcohol, Industrial Methylated Spirits
Product Codes/Trade Names:	
Recommended Use:	Fuel for ventless fires designed to burn liquid bioethanol
Applicable In:	Australia
Supplier:	MAD Design Australia Pty Ltd (ABN 83117378917)
Address:	40-42 O'Riordan St, Alexandria NSW 2015 Australia
Telephone:	1300 003 NRG
Email Address:	info@e-nrg.com.au
Facsimile:	+61 2 9997 6050
Emergency Phone Number:	000 Fire Brigade and Police (available in Australia only).
Poisons Information Centre:	13 11 26 (available in Australia only).

This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with National standards and guidelines from the Australian Safety and Compensation Council (ASCC, formerly National Occupational Health and Safety Commission - NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organization. The Supplier will issue a new MSDS when there is a change in product specifications and/or ASCC standards, codes, guidelines, or Regulations.

SECTION 2: HAZARD IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE: Classified as Hazardous according to the criteria of the Australian Safety and Compensation Council ASCC (formerly NOHSC) Approved Criteria For Classifying Hazardous Substances [NOHSC:1008] 3rd Edition.

Ethanol (IMS 100) is classified as Dangerous Goods Class 3 according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Risk Phrase: R11 Highly Flammable
Safety Phrase: S2 Keep out of reach of children
S7 Keep container tightly closed
S16 Keep away from sources of ignition – No smoking

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Synonyms	Proportion:	CAS Number:
Ethanol (Ethyl alcohol)		100%	64-17-5

SECTION 4: FIRST AID MEASURES

If poisoning occurs, contact a doctor or Poisons Information Centre.

Swallowed:	If a minor amount has been accidentally swallowed, then, if conscious, rinse mouth with water and then dilute stomach contents by giving large amounts of water. Seek medical attention. Do not attempt to induce vomiting or give anything by mouth to an unconscious person. If person vomits place person on their side in recovery position.
Eyes:	Flush eye with flowing water for a minimum of 15 minutes. Seek medical attention promptly if irritation persists or any loss of vision occurs.
Skin:	Remove contaminated clothing. Wash contaminated skin with soap and water. Seek medical attention if swelling, redness, blistering or irritation persists. Launder contaminated clothing before re-use.
Inhaled:	Remove promptly to fresh air. If there are signs of drunkenness (intoxication or inebriation) or respiratory irritation, dizziness, nausea or headache occurs, seek immediate medical attention. Treat unconsciousness by placing the person in the coma position. Apply artificial respiration if breathing stops.
First Aid Facilities:	First aid kits, safety showers, eye wash stations
Advice to Doctor:	Treat symptomatically. Gastric lavage may be indicated if swallowed. Do not wait for symptoms to develop. General measures should be taken top control acidosis and maintain urine output.

SECTION 5: FIRE FIGHTING MEASURES

Flammability: Flammable liquid. Avoid heat and sources of ignition. Prevent build-up of flammable vapors. Hoses should be electrically continuous and containers bonded to avoid static charge build-up.

May form flammable mixtures with air. Burns with a colourless flame. The vapor is heavier than air and may travel along the ground; distant ignition and flash back are possible.

Run off to sewers and drains may cause explosions. Isolate for at least 800 metres in all directions if tanks or tankers are involved. The use of compressed air for filling, discharging, mixing or handling is prohibited due to the vapor hazard.

All vessels must be earthed to avoid generation of static charges when agitating or transferring solvents. Avoid all ignition sources. Intrinsically safe equipment is necessary in areas where this chemical is being used.

Ethanol, the primary ingredient of e-NRG fuel, presents a significant flammability risk if appropriate steps to reduce the likelihood of ignition are not followed.

These include:

- Permitting for volumes of e-NRG greater than 5 Litres stored inside, or greater than 100 Litres stored outside.
- Removal of all potential sources of ignition including sparks and open flames
- Maintenance of good ventilation of enclosures where e-NRG is stored
- Storage of volumes of e-NRG greater than 100 Litres in an approved storage cabinet
- Storage in such a way as to reduce the likelihood of spillage or container rupture
- Responsible handling to include:
  - Use only in ventless fireplaces designed to burn liquid bioethanol

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- Use of the Jerry Can in an approved manner and with attention to the possible presence of flames or other ignition sources in or near the product
- Limiting access to qualified users
- Proper transfer techniques to limit spillage and generation of static electric discharge (i.e bonding and grounding)
- Proper labeling and signage in accordance with applicable fire codes

These precautions are necessary to reduce risk of damage to property, injury and death resulting from accidental ignition of e-NRG.

This fuel has been assigned a Class III flammability rating for low flash point, the associated signal word 'DANGEROUS' is characteristic of a large number of liquid hydrocarbon fuels. However, ethanol presents additional hazards for its ability to form a flammable gas mixture at ambient temperatures that is readily ignitable by sparks or open flames. The gas ignition event can propagate to the interior of a fuel storage container and ignite the head space fuel vapors, causing rupture of the container, violent spread of the stored liquid fuel and subsequent injuries or a large fire. Liquid fuels are typically a high risk commodity in fire for their ability to grow to a large heat release rate in a short period of time. This reduces the effectiveness of automatic or first responder firefighting efforts and raises the risk of loss of containment by firefighting crews and large scale property damage and potential injury and loss of life.

Suitable extinguishing media: Use dry chemical, carbon dioxide or alcohol stable foam. Water may be ineffective.

Hazards from combustion products: Burning can produce carbon monoxide and/or carbon dioxide.

Special protective precautions and equipment for fire fighters: Flammable liquid. Use water to cool exposed containers. Heating can cause expansion or decomposition leading to violent rupture of containers. If safe to do so, remove containers from path of fire.

Spills and leaks may be washed away with copious volumes of water, fog or spray.

For major fires or where the atmosphere is either oxygen deficient or contains unacceptable levels of combustion products, fire fighters must wear self contained breathing apparatus with full face-mask and protective clothing.

HAZCHEM Code: 2YE

SECTION 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedure: In the event of a spill eliminate all sources of ignition and take measures to prevent static discharge. No smoking. Use water spray to disperse vapor.

Clear area of all personnel not directly involved in the clean up.

All personnel involved in the containment and disposal procedures to wear protective equipment as described in Section 8 to prevent skin and eye contamination and inhalation of vapors.

Ventilate area well and ensure the atmosphere is safe before personnel return to the work area.

Containment Procedure: Stop and contain the spill for salvage or absorb in inert absorbent material (e.g. soil, sand, vermiculite) for disposal by an approved method. Prevent run-off into drains and waterways.

If contamination of sewers or waterways has occurred, advise the local emergency services.

Clean Up Procedure: Wash the cleaned up area with copious volumes of water to remove any trace amounts of product. Spills can be converted to non-flammable mixtures by dilution with water.

Non-returnable containers should be de-gassed prior to disposal. Dispose of all waste Containers and used drums in accordance with local authority guidelines.

SECTION 7: HANDLING AND STORAGE

Handling: Use in well ventilated areas away from all ignition sources. Intrinsically safe equipment only must be used in area where this chemical is being used.

The use of compressed air for filling, discharging, mixing or handling is prohibited due to the vapour hazard. Containers must be earthed to avoid generation of static charges when agitating or transferring product.

Avoid skin and eye contact and breathing in vapour.

Storage: Store in tightly closed containers in cool, dry, isolated and well ventilated areas away from heat, sources of ignition and incompatibles. Store away from oxidizing agents. Keep containers closed at all times – check regularly for leaks.

Do not eat, drink or smoke in areas of use or storage. Observe State

Regulations concerning the storage and handling of Dangerous Goods. Store with all precautions required for handling flammable liquids.

The requirement of Australian Standard AS 1940 should be observed in addition to AS 1020, AS 1076, AS 2380 and AS 3000.

Empty containers retain residue (liquid and/or vapour) and are dangerous. Do not pressure cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.

Incompatibilities: Not to be stored with oxidizing agents (Class 5.1)

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Standards: National Occupational Exposure Standard (NES) Australian Safety & Compensation Council, ASCC (formerly NOHSC)

Ethanol IMS 100

TWA – 1000ppm (1880 mg/m3)

STEL - None Allocated

Carcinogen Category - None Allocated

Notices - None Allocated

Notes **-** All occupational exposures to atmospheric contaminants should be kept to as low a level as is workable (practicable) and in all cases to below the National Standard.

These Exposure Standards are guides to be used in the control of occupational health hazards.

These Exposure Standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

TWA (Time Weighted Average): the time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

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According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

STEL (Short Term Exposure Limit): the average airborne concentration over a 15 minute period that should not be exceeded at any time during a normal eight-hour work day.

Biological Limit Values: N/A

ENGINEERING CONTROLS

- **Ventilation:** Local exhaust ventilation and/or mechanical (general) exhaust is recommended where vapours are likely to be generated. All such equipment must be intrinsically safe.
- **Special Consideration for Repair &/or Maintenance of Contaminated Equipment:** Empty containers retain residue (liquid and/or vapour) and are dangerous. Do not pressure cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.

  Vapour is heavier than air – prevent concentration in hollows or sumps. Do not enter confined spaces where vapour may have collected. Keep containers closed when not in use.

PERSONAL PROTECTION

- **Personal Hygiene:** Protective clothing (gloves, coveralls, boots, etc.) should be worn to prevent skin contact. Always wash hands before smoking, eating, drinking or using the toilet.

  Wash contaminated clothing and other protective equipment before storing or re-using.
- **Skin Protection:** Avoid skin contact by the use of approved chemical resistant gloves and aprons – PVC or Neoprene (AS 2161).
- **Eye Protection:** Avoid eye contact by wearing chemical goggles with side shields or face shield (AS/NZS 1336) whenever exposed to vapour or mist or if there is a risk of splashing liquid in the eyes.

  Safety showers with eye-wash should be provided in all areas where product is handled.
- **Respiratory Protection**: None should be needed if engineering, storage and handling controls are adequate to ensure that atmospheric contamination is kept below the National Standard.

  Where vapour concentrations are likely to approach or exceed the National Standard, an approved organic vapour respirator (AS/NZS 1715 and 1716) must be worn. In high vapour concentrations or in suspected oxygen deficient atmospheres, such as empty vessels or confined spaces, use air supplied hood.
- **Thermal Protection:** None should be needed under normal circumstances.
- **Smoking & Other Dusts:** Smoking must be prohibited in all areas where this product is used - see safety information on flammability.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Mobile clear colourless liquid with pleasant whisky-like odour
Odour:	Whisky like odour
pH, at stated concentration:	N/A
Vapour Pressure:	40 mm Hg (19°C)
Vapour Density:	N/A
Boiling Point/range (°C):	78°C
Freezing/Melting Point (°C):	N/A
Solubility:	Miscible in water
Specific Gravity (H2O = 1):	0.79 (20°C)

FLAMMABLE MATERIALS

• **Flash Point:**	13°C
• **Flash Point Method:**	Closed cup
• **Flammable (Explosive) Limit - Upper:**	19%
• **Flammable (Explosive) Limit – Lower:**	3.5%
• **Auto ignition Temperature:**	N/A

ADDITIONAL PROPERTIES

• **Evaporation Rate:**	N/A
• **Volatile Organic Compounds Content (VOC):**	(as specified by the Green Building Council of Australia) Not Applicable
• **% Volatiles by volume:**	100%

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable under ordinary conditions of use and storage.

Incompatible Materials: Strong oxidants, silver salts, acid chlorides, alkali metals, metal hydrides, hydrazine and many other substances.

Conditions to avoid: Heat, flames, ignition sources and incompatibles.

Hazardous Decomposition Products: Carbon dioxide and/or carbon monoxide may form when heated to decomposition.

Hazardous Reactions: Hazardous polymerization will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Health effects information is based on reported effects in use from overseas and Australian reports.

Toxicological Data:
Toxicological Information: Based on product data
Oral – LD50 (Rat); 7060 mg / kg
Inhalation – LC50 (rat);38mg/l/ 10h

EFFECTS: ACUTE

Swallowed: Accidental swallowing unlikely under normal occupational exposures, but swallowing ethanol may cause harmful central nervous system effects. Effects may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death. Severe acute intoxication may cause hypoglycaemia, hypothermia and extensor rigidity. Other effects may include decreased blood pressure, vomiting blood, and blood changes. Aspiration into the lungs may cause pneumonitis.

Eyes: Vapours may irritate the eyes. Liquid and mists may severely irritate or damage the eyes.

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Skin: Moderately irritating to the skin. Brief contact may cause redness. Repeated or prolonged contact may lead to dermatitis with redness. Itching, swelling and possible secondary infection. A small proportion of people exposed to repeated skin contact might develop an allergic skin reaction.

Inhaled: Moderately irritating to respiratory tract and mucous membranes. Inhalation of the vapour may result in headaches, nausea and vomiting. High concentrations may cause central nervous system symptoms similar to "swallowed" above.

EFFECTS: CHRONIC

Repeated or prolonged contact may lead to dermatitis with redness, itching, swelling and possible secondary infection. Chronic intoxication by swallowing or repeated inhalation may cause degenerative changes in the liver, kidneys, hair, gastrointestinal tract and heart muscle. Persons with pre-existing liver Impairment, skin and respiratory disorders may be at an increased risk from exposure. Ethanol may also cause adverse reproductive effects. Concurrent absorption of ethanol and some drugs may cause adverse health effects.

ADDITIONAL NOTES

Note: The denaturants may be one or more of the following: diethyl phthalate, tertiary butyl alcohol, denatonium benzoate, methyl isobutyl ketone or fluorescein. The denaturants never exceed 1.0% of the final product and at this low concentration will not alter the safety of the product. Nasal and eye irritation usually occur at concentrations in air well below the Exposure Standard.

SECTION 12: ECOLOGICAL INFORMATION

Eco-toxicity: Toxicity to fish (acute). Keep out of sewers, storm drains, surface waters and soil

Persistence and Degradability: No data available.

Mobility: No data available.

SECTION 13: DIPOSAL CONSIDERATIONS

Suitable for incineration by approved agent under controlled conditions if permitted by local authorities, otherwise disposal must be in accordance with local waste authority requirements.

Product must be contained and not disposed to sewerage systems, drains or waterways. Advise flammable nature.

Empty containers must be decontaminated by rinsing with water.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name:	ETHANOL (IMS 100)
UN number:	1170
DG Class:	3
Subsidiary Risk 1:	None Allocated
Packaging Group:	II
HAZCHEM code:	2YE
Marine Pollutant:	No
Special Precautions for User:	Refer to incompatibilities in section 7 and stability and reactivity information in section 10.

ADDITIONAL TRANSPORT REQUIREMENTS: Nil

SECTION 15: REGULATORY INFORMATION

Poisons Schedule: Not Scheduled

SECTION 16: OTHER INFORMATION

For further information on this product, please contact:

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ADDITIONAL INFORMATION

Australian Standards References:

AS 1020	The Control of undesirable static electricity.
AS 1076	Code of Practice for selection, installation and maintenance of electrical apparatus and associated equipment for use in explosive atmospheres (other than mining applications) – Parts 1 to 13.
AS/NZS 1336	Recommended Practices for Occupational Eye Protection
AS/NZS 1715	Selection, Use and Maintenance of Respiratory Protective Devices
AS/NZS 1716	Respiratory Protective Devices
AS 1940	The Storage and Handling of Flammable and Combustible Liquids.
AS 2161	Industrial Safety Gloves and Mittens (excluding electrical and medical gloves)
AS 2380	Electrical equipment for explosive atmospheres – Explosion Protection Techniques (Parts 1 to 9).
AS 3000	Electrical installations (known as the Australian/ New Zealand Wiring Rules).

Other References:

NOHSC:2011(2003)	National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition, April 2003, National Occupational Health and Safety Commission.
NOHSC; 2012 (1994)	National Code of Practice for the Labeling of Workplace Substances, March 1994, Australian Government Publishing Service, Canberra.
NES	National Occupational Exposure Standards for workplace Atmospheric Contaminants (NES) Australian Safety and Compensation Council, ASCC (Formerly NOHSC) 1995 as amended.
ADG Code 6th Edition	Australian Dangerous Goods Code 6th Edition

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AUTHORISATION

Reason for Issue: 5 year review
Authorized by: MAD Design Australia Pty Ltd Director
Date of Issue: 25 October 2011
Expiry Date: October 2021

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END OF SDS

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