SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name: Ethanol (Denatured with Methanol)

1.2 Relevant identified uses of the substance or mixture

Identified uses: Laboratory chemicals, Manufacture of substances
Uses advised against: Not applicable

1.3 Details of the supplier of the safety data sheet

Company: Elite Advanced Materials Sdn Bhd
Lot 34, Jalan RP2, Rawang Perdana Industrial Estate, 48000 Rawang, Selangor, Malaysia
E-mail address: enquiry@eamaterials.com

1.4 Emergency telephone number

Emergency phone: +60 3-6091 4200 (Local business hours only)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>Category 2</td>
</tr>
<tr>
<td>Eye Irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>Category 4</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 2</td>
</tr>
</tbody>
</table>
2.2 Label elements
Labeling in compliance to Regulation (EC) No. 1272/2008 [CLP/GHS]

Hazard pictograms

- GHS02
- GHS06
- GHS08

Signal word
Danger

Hazard statements
- H225 - Highly flammable liquid and vapour
- H302 - Harmful if swallowed
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H370 - Causes damage to organs

Precautionary statements
- P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
- P240 - Ground/bond container and receiving equipment
- P260 - Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
- P280 - Wear eye protection, face protection, protective clothing, protective gloves

Response
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308 + P311: IF exposed or concerned: Call a POISON CENTER or doctor/physician.
- P337 + P313: If eye irritation persists: Get medical advice/attention.

Storage
- P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards
Not available
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Synonyms: Denatured Alcohol, Ethyl Alcohol, Reagent Alcohol

Formula: C₂H₆O

Molecular Weight: 46.07 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Identity</th>
<th>Classification Code</th>
<th>H-Code</th>
<th>Concentration (by volume)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>CAS-No.: 64-17-5</td>
<td>Flam. Liq. 2, Eye Irrit. 2A</td>
<td>H225, H319</td>
<td>&gt;= 90 - &lt;= 100%</td>
</tr>
<tr>
<td>Methanol</td>
<td>CAS-No.: 67-56-1</td>
<td>Flam. Liq. 2, Acute Tox. 3, STOT SE 1</td>
<td>H225, H301, H331, H311, H370</td>
<td>&gt;= 3 - &lt; 10%</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid measures

General information
Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

If inhaled
Move person into fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

In case of skin contact
Take off immediately all contaminated clothing. Wash off with soap and plenty of water for at least 15 minutes. Take victim to a doctor if irritation persists.

In case of eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
If swallowed
Do NOT induce vomiting. Have victim drink water or milk to dilute if victim is conscious. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and delayed symptoms and effects
Irritant effects, respiratory paralysis, Dizziness, narcosis, inebriation, euphoria, Nausea, Vomiting

4.3 Indication of any immediate medical attention and special treatment
No data available.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide (CO₂) to extinguish flames.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for fire-fighters
Full protective clothing and self-contained breathing apparatus are required during handling.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Personal protective equipment is required during handling. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. Respirators should be selected accordance to OSHA (29 CFR 1910 134).

6.2 Environmental precautions
Do not discharge into drains or waterways. Prevent further leakage or spillage if safe to do so.

6.3 Methods and material for containment and cleaning up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. (see section 13).
6.4 Reference to other sections
Information on waste treatment, see Section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precaution for safe handling
Personal protective equipment is required during handling to avoid contact with skin and eyes. Please handle the chemical under the fume hood to avoid inhalation of vapour or mist. Keep container tightly closed and away from sources of heat, sparks and naked flames. Take precautionary measures against static discharges.

7.2 Conditions for safe storage, including any incompatibilities
Container must store in a cool dry, well-ventilated place and away from all sources of ignition, heat and direct sunlight. Avoid accumulation of electrostatic charges.

7.3 Specific end use
No further relevant information available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components within workplace control parameters.

8.2 Exposure control
Personal protection measures, such as personal protective equipment
Do not eat, drink or smoke during chemical handling. Remove and wash contaminated clothing before re-using. Ventilation must working properly, especially in confined areas. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled.

Eye/face protection
Chemical goggles or safety glasses is required during handling. A face shield may also be necessary. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Wear appropriate protective gloves and clothing to prevent skin exposure. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
Full contact*
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact*
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 31 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

*Source – Sigma Aldrich, 2015

**Body protection**
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor瑞士</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH - value</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point / Range</td>
<td>-114 °C</td>
</tr>
<tr>
<td>Boiling point / Range</td>
<td>78 °C at 760 mmHg</td>
</tr>
<tr>
<td>Flash point</td>
<td>13 °C [closed cup]</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability limit - LEL</td>
<td>3.3 % (V)</td>
</tr>
<tr>
<td>Flammability limit - UEL</td>
<td>19 % (V)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>44.6 mm Hg at 20.0 °C</td>
</tr>
<tr>
<td>Vapor density (air = 1)</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Density : 0.789 g/ml
Water solubility : Soluble in water
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature : 363 °C / 685.4 °F
Decomposition temperature : No data available
Viscosity : No data available
Explosive properties : No data available
Oxidising properties : No data available
Surface Tension : No data available

9.2 Other information
Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Incompatible materials, ignition sources, excess heat, oxidizers, flames, and sparks

10.5 Incompatible materials
Aluminium, Acids, Oxidizing agents, Alkali metals, Halogenated compounds, Ammonia, Acid chlorides, Acid anhydrides, Reducing agents, Peroxides

10.6 Hazardous decomposition products
Other decomposition products – No data available
In the event of fire: see section 5

SECTION 11: TOXICOLOGY INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available
Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: Carcinogenicity of the mixture has not been determined. Consumption of alcoholic beverages is considered carcinogenic to humans (Group 1) by IARC, though ethanol itself has not been classified by this agency. No other components are listed as carcinogens by IARC, US OSHA or NTP.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available
Kidney - Irregularities - Based on Human Evidence (2-Propanol)

SECTION 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available
12.4 Mobility in soil
No data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment method

For small amounts absorb with sand, vermiculite or similar and dispose of to an approved landfill site. Contact the manufacturer for additional information if larger amounts are involved. Prevent contamination of drains and waterways as aquatic life may be threatened and environmental damage may result.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1170
IMDG: 1170
IATA-DGR: 1170

14.2 UN proper shipping name
ADR/RID: ETHANOL (ETHYL ALCOHOL)
IMDG: ETHANOL (ETHYL ALCOHOL)
IATA-DGR: ETHANOL (ETHYL ALCOHOL)

14.3 Transport hazard class(es)
ADR/RID: 3 (6.1)
IMDG: 3 (6.1)
IATA-DGR: 3 (6.1)

14.4 Packaging group
ADR/RID: II
IMDG: II
IATA-DGR: II

14.5 Environmental hazards
ADR/RID: no
IMDG Marine pollutant: no
IATA-DGR: no

14.6 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
No data available

14.7 Special precautions for user
No data available
SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

SECTION 16: OTHER INFORMATION

This information is based on present level of our knowledge, however, this shall not constitute a guarantee product features and shall not establish a legally valid contractual relationship.

Relevant phrases:

H225  Highly flammable liquid and vapour
H302  Harmful if swallowed
H315  Causes skin irritation
H319  Causes serious eye irritation
H370  Causes damage to organs

Abbreviations:

ADR : European agreement concerning the international carriage of dangerous goods by road.
IMDG : International Maritime Dangerous Goods.
IATA : International Air Transport Association
ICAO : International Civil Aviation Organization
RID : Regulations concerning the International Carriage of Dangerous goods by rail.

Notice to reader

The information contained in this Safety Data Sheet is based on the present state of knowledge and current national legislation. It provides guidance on health, safety and environmental aspects of the products and should not be construed as any guarantee of technical performance or suitability for particular application.

The information contained in this Safety Data Sheet comes from sources believed to be accurate or otherwise technically correct. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. The users are advised to carry out their own evaluation of the material to determine suitability in their application. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.