SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product Name: 2-ethoxy-2-methylpropane / ETHYL TERT-BUTYL ETHER
Product Description: V4020a- ETBE-2-ethoxy-2-methylpropane / ETHYL TERT-BUTYL ETHER
Trade name: ETBE
Product Code: ETBE
CAS No.: 637-92-3
EC No.: 211-309-7

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified use(s): Fuel for engines.
Blend component.

1.3 Details of the supplier of the safety data sheet
Company Identification: Vitol SA
Boulevard du Pont d'Arve 28
P.O. Box 384
1211 Geneva 4
Switzerland
Telephone: +31 10 498 7200
Fax: +31 10 452 9545
E-Mail (competent person): xreach@vitol.com

1.4 Emergency telephone number
Emergency Phone No. (24 h): +44 (0) 1235 239 670 (24 hours, 7 days)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
According to Regulation (EC) No. 1272/2008 (CLP)
Flam. Liq. 2; H225
STOT SE 3; H336
F; R11
R67

2.2.1 Label elements
According to Regulation (EC) No. 1272/2008 (CLP)
Hazard pictogram(s):

Signal word(s): Danger
Hazard statement(s): H225: Highly flammable liquid and vapour.
H336: May cause drowsiness or dizziness.

Precautionary statement(s): P210: Keep away from heat, sparks, open flame, hot surfaces -

Revision: 002
Date: 03 February 2011
Page: 1/7
SAFETY DATA SHEET

No smoking.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P271: Use only outdoors or in a well-ventilated area.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P403 + P235: Store in a well-ventilated place. Keep cool.

2.2.2 Label elements


Hazard pictogram(s): Highly flammable.

Hazard Symbol:

Risk Phrases: R11: Highly flammable.
R67: Vapours may cause drowsiness and dizziness.

Safety Phrases: S9: Keep container in a well-ventilated place.
S16: Keep away from sources of ignition - No smoking.
S33: Take precautionary measures against static discharges.

2.3 Other hazards

Vapour may create explosive atmosphere. The vapour is heavier
than air; beware of pits and confined spaces. May cause
irritation to eyes, skin and air passages.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

EC Classification No. 1272/2008

<table>
<thead>
<tr>
<th>Hazardous ingredient(s)</th>
<th>%W/W</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>Hazard symbol(s) and hazard statement(s)</th>
</tr>
</thead>
</table>
| 2-ethoxy-2-methylpropane | 100  | 637-92-3 | 211-309-7 | Flam. Liq. 2; H225
|                         |      |         |        | STOT SE 3; H336 |

EC Classification No. 67/548/EC

<table>
<thead>
<tr>
<th>Hazardous ingredient(s)</th>
<th>%W/W</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>Risk Phrases and Safety Phrases</th>
</tr>
</thead>
</table>
| 2-ethoxy-2-methylpropane | 100  | 637-92-3 | 211-309-7 | F; R11
|                         |      |         |        | R67 |

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Remove patient from exposure, keep warm and at rest. If symptoms persist, obtain medical attention.

Skin Contact: Remove contaminated clothing immediately and drench affected skin with plenty of water, then wash with soap and water. Contaminated clothing should be thoroughly cleaned. If symptoms persist, obtain medical attention.

Eye Contact: If substance has got into the eyes, immediately wash out with plenty of water for at least 15 minutes. If symptoms persist, obtain medical attention.

Ingestion: Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. If symptoms persist, obtain medical attention.

Revision: 002 2-ethoxy-2-methylpropane / ETHYL TERT-BUTYL ETHER Date: 03 February 2011 Page: 2/7
4.2 Most important symptoms and effects, both acute and delayed

May cause irritation to eyes, skin and air passages. Vapours may cause drowsiness and dizziness.

4.3 Indication of the immediate medical attention and special treatment needed

If breathing is laboured, oxygen should be administered by qualified personnel. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media:
- Foam, CO2 or dry powder.
- For large fire use: Water.

Unsuitable Extinguishing Media:
- Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces.

May give off toxic fumes in a fire. Carbon monoxide, Carbon dioxide.

5.3 Advice for fire-fighters

A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Keep fire exposed containers cool by spraying with water.

Flash Point (°C): -19
Flammable Limits (Lower) (%v/v): 1.23
Flammable Limits (Upper) (%v/v): 7.7
Auto Ignition Temperature (°C): 375

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Eliminate sources of ignition. Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces. Ensure adequate ventilation. Use non-sparking hand tools and explosion proof electrical equipment. Take precautionary measures against static discharges.

Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves. (See Section: 8). Contaminated clothing should be thoroughly cleaned.

6.2 Environmental precautions

Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

6.3 Methods and material for containment and cleaning up

Adsorb spillages onto sand, earth or any suitable adsorbent material. Sweep up carefully with non-sparking tools. Transfer to a container for disposal. Wash spill area with soapy water. Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor.

6.4 Reference to other sections

Personal Protection: See Section: 8.

Other advice

Caution - spillages may be slippery.
SAFETY DATA SHEET

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Eliminate sources of ignition. Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces. Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded. Use non-sparking hand tools and explosion proof electrical equipment. Take precautionary measures against static discharges.

Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves. (See Section: 8).

Do not eat, drink or smoke at the work place. Wash hands and exposed skin after use. Contaminated clothing should be thoroughly cleaned.

7.2 Conditions for safe storage, including any incompatibilities
Keep away from heat and sources of ignition. Keep from direct sunlight. Keep only in the original container in a cool, well-ventilated place. Keep/store away from: Oxidising agents.

7.3 Specific end use(s)
Industrial use only.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Spain: 5 ppm ; 21 mg/m³ (VLA-ED)

8.2 Exposure controls
8.2.1 Appropriate engineering controls
Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded.

8.2.2 Personal Protection

Eye/face protection
Goggles giving complete protection to eyes. (EN 166)

Skin protection
Protective gloves. (EN 374)

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment. (BS EN 14387:2004+A1)

Other:
Apron or other light protective clothing, boots and plastic or rubber gloves.

8.2.3 Environmental Exposure Controls
Avoid release to the environment.
SAFETY DATA SHEET

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance: Liquid.
Colour: Colourless.
Boiling Point (°C): 70
Melting Point (°C): -94
Flash Point (°C): -19
Flammable Limits (Lower) (%v/v): 1.23
Flammable Limits (Upper) (%v/v): 7.7
Vapour Pressure (Pascal): 12,800 (@ 20° C)
Specific Gravity: 0.75 (@ 20° C)
Solubility (Water): 1.2g/100g
Partition Coefficient: (n-Octanol/water) log Pow: 1.28
Auto Ignition Temperature (° C): 375
Explosive Properties: Vapour may create explosive atmosphere.
Oxidising Properties: Not oxidising.

9.2 Other information
No information available.

10. STABILITY AND REACTIVITY

10.1 Reactivity
No information available.
10.2 Chemical stability
Stable under normal conditions.
10.3 Possibility of hazardous reactions
No information available.
10.4 Conditions to avoid
Keep away from heat, sources of ignition and direct sunlight.
10.5 Incompatible materials
Oxidising agents.
10.6 Hazardous Decomposition Product(s)
May give off toxic fumes in a fire. Carbon monoxide, Carbon dioxide.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity:
Ingestion: LD₅₀ (oral/rat): > 2000 mg/kg
Inhalation: LC₅₀(inhalation/rat): > 5,880 mg/m³/4h
Skin Contact: LD₅₀ (dermal/rabbit): > 20 mg/kg
Eye Contact: No information available.
Skin corrosion/irritation
Repeted and/or prolonged skin contact may cause irritation.
Serious eye damage/irritation:
May cause eye irritation.
Respiratory or skin sensitization:
Negative.
Mutagenicity:
There is no evidence of mutagenic potential.
Carcinogenicity:
No evidence of carcinogenicity.
Reproductive toxicity:
Negative.
STOT-single exposure:
May cause drowsiness and dizziness.
STOT-repeated exposure:
Negative.
Aspiration hazard:
Negative.
Other information:
No information available.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
LC₅₀ (Fish): > 100 mg/l/96h
WGK: 1.
12.2 Persistence and degradability
May evaporate quickly.
12.3 Bioaccumulative potential
The product has low potential for bioaccumulation.
12.4 Mobility in soil
The product has low mobility in soil.
12.5 Results of PBT and vPvB assessment
No information available.
12.6 Other adverse effects
No information available.
13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Do not empty into drains; dispose of this material and its container in a safe way. To be disposed of as hazardous waste. Disposal should be in accordance with local, state or national legislation.

14. TRANSPORT INFORMATION

14.1 UN number
1179

14.2 Proper Shipping Name
ETHYL BUTYL ETHER

14.3 Transport hazard class(es)
3

14.4 Packing Group
II

14.5 Environmental hazards
Not classified as a Marine Pollutant.

14.6 Special precautions for user
Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

15. REGULATORY INFORMATION

According to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictogram(s):

Signal word(s):
Danger

Hazard statement(s):
H225: Highly flammable liquid and vapour.
H336: May cause drowsiness or dizziness.

Precautionary statement(s):
P210: Keep away from heat, sparks, open flame, hot surfaces - No smoking.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P271: Use only outdoors or in a well-ventilated area.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P403 + P235: Store in a well-ventilated place. Keep cool.


Hazard pictogram(s):

Hazard Symbol:
Highly flammable.

Risk Phrases:
R11: Highly flammable.
R67: Vapours may cause drowsiness and dizziness.

Safety Phrases:
S9: Keep container in a well-ventilated place.
S16: Keep away from sources of ignition - No smoking.
S33: Take precautionary measures against static discharges.
16. OTHER INFORMATION

Full text of Hazard statements and Risk phrases for pure substances listed in section 3.

Hazard Symbol: H225: Highly flammable liquid and vapour.
H336: May cause drowsiness or dizziness.

Risk Phrases: R11: Highly flammable.
R67: Vapours may cause drowsiness and dizziness.

The following sections contain revisions or new statements: 1-16.

Abbreviations:
CAS = Chemical Abstracts Service;
CNS = Central Nervous System;
EINECS = European Inventory of Existing Commercial Chemical Substances;
EC50 = Effective Concentration 50%;
IARC = International Agency for Research on Cancer;
IC50 = Inhibitory Concentration 50%;
LC50 = Lethal Concentration 50%;
LD50 = Lethal Dose 50%;
LTEL = Long Term Exposure Limit;
STEL = Short Term Exposure Limit;
TWA = Time Weighted Average;
EH40 = UK Occupational Exposure Limits
VLA-ED = Exposure limit value- Daily exposure (Valor Limite Ambiental-Exposición Diaria)
VLB = Biological Limit Values (Valores Limite Biológicos)
VLI= Indicative limit values

References:
The Merck Index, 12th Ed.,
CRC handbook of Chemistry and Physics, 81st Ed., 2000-2001
RTECS (www.ccinfoweb2.ccohs.ca/rtecs)

Disclaimer:
The information and recommendations contained herein are based upon data believed to be up-to-date and correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information and recommendations contained herein. We accept no responsibility and disclaim all liability for any harmful effects that may be caused by (incorrect) use, handling, purchase, resale, or exposure to our product. Customers and users of our product must comply with all applicable health and safety laws, regulations, and orders. In particular, they are under an obligation to carry out a risk assessment for the particular work places and to take adequate risk management measures in accordance with the national implementation legislation of EU Directives 89/391 and 98/24.