SECTION 1: Identification of the substance/mixture and of the company/undertaking

Date issued 26.02.2014

1.1. Product identifier
Product name Ethanol 99,9%
Chemical name Ethyl alcohol
Synonyms methyl carbinol
REACH Reg. No. 01-2119457610-43-xxxx
CAS no. 64-17-5
EC no. 200-578-6
Index no. 603-002-00-5
Article no. 12110000

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.3. Details of the supplier of the safety data sheet
Company name Fred Holmberg & Co AB
Office address Geijersgatan 8
Postal address Box 60056
Postcode S-216 10
City Limhamn
Country Sweden
Tel +46 (0)40 15 79 20
Fax +46 (0)40 16 22 95
E-mail info@holmberg.se
Website http://www.holmberg.se/en/

1.4. Emergency telephone number
Emergency telephone 112 (Europe)

SECTION 2: Hazards identification

2.1. Classification of substance or mixture
Classification according to 67/548/EEC or 1999/45/EC F; R11
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS] Flam. Liq. 2;H225;
Eye Irrit. 2;H319;

2.2. Label elements
Hazard Pictograms (CLP)

Signal word Danger
Hazard statements H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. -- No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P370 + P378 In case of fire: Use for extinction.
P403 + P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container to

2.3. Other hazards
Other hazards Not known.

SECTION 3: Composition/information on ingredients
3.1. Substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Classification</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>CAS no.: 64-17-5 EC no.: 200-578-6 Index no.: 603-002-00-5 Synonyms: Ethanol</td>
<td>F; R11 Flam. Liq. 2; H225</td>
<td>99.8 %</td>
</tr>
</tbody>
</table>

Column headings
CAS no. = Chemical Abstracts Service; EU (Einecs or Elincs number) = European inventory of Existing Commercial Chemical Substances; Ingredient name = Name as specified in the substance list (substances that are not included in the substance list must be translated, if possible). Contents given in; %, %wt/wt, %vol/wt, %vol/vol, mg/m3, ppb, ppm, weight%, vol%

HH/HF/HE
T+ = Very toxic, T = Toxic, C = Corrosive, Xn = Harmful, Xi = Irritating, E = Explosive, O = Oxidizing, F+ = Extremly flammable, F = Very flammable, N = Environmental hazard

SECTION 4: First aid measures
4.1. Description of first aid measures

Inhalation Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

Skin contact Remove contaminated clothes and rinse skin thoroughly with water.

Eye contact Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention.

Ingestion NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Do not induce vomiting. Rinse mouth with water. Get medical attention if any discomfort continues.

4.2. Most important symptoms and effects, both acute and delayed
Information for health personnel Treat Symptomatically. Do not give victim anything to drink if he is unconscious.

4.3. Indication of any immediate medical attention and special treatment needed
Specific details on antidotes No recommendation given.

SECTION 5: Firefighting measures
5.1. Extinguishing media
Suitable extinguishing media: Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

5.2. Special hazards arising from the substance or mixture
Fire and explosion hazards: HIGHLY FLAMMABLE! Solvent vapours may form explosive mixtures with air.

5.3. Advice for firefighters
Fire fighting procedures: No specific fire fighting procedure given.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Personal protection measures: Ensure suitable personal protection (including respiratory protection) during removal of spillages in a confined area. Ventilate well. Stop leak if possible without risk. Avoid contact with skin and eyes. Do not breathe vapour. For personal protection, see section 8.

6.2. Environmental precautions
Environmental precautionary measures: Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up
Cleaning method: Dam and absorb spillages with sand, earth or other non-combustible material. Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

6.4. Reference to other sections
Other instructions: Information om exponering / personligt skydd och avfallshantering finns i avsnitt 8 och 13. (Information regarding exposure / personal protection and disposal, see section 8 and 13).

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Handling: Keep away from heat, sparks and open flame. Take precautionary measures against static discharges. Mechanical ventilation may be required.

Protective Safety Measures
Advice on general occupational hygiene: Provide easy access to water supply and eye wash facilities.

7.2. Conditions for safe storage, including any incompatibilities
Storage: Keep away from heat, sparks and open flame. Ground container and transfer equipment to eliminate static electric sparks. Store in a cool and well-ventilated place.

7.3. Specific end use(s)
Specific use(s): Not entered.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Occupational Exposure limit values

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Value</th>
<th>TWA Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>CAS no.: 64-17-5</td>
<td>8-hour TWA: 1000 ppm</td>
<td>2011</td>
</tr>
<tr>
<td></td>
<td>EC no.: 200-578-6</td>
<td>8-hour TWA: 1920 mg/m3</td>
<td></td>
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<tr>
<td></td>
<td>Index no.: 603-002-00-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Synonyms: Ethanol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other Information about threshold limit values: Norske grenseverdier; FOR-2011-12-06-1358 vedlegg 1.

Etanol: 8 t.: 500ppm, 950 mg/m3 (2003)
8.2. Exposure controls
Occupational exposure limits
Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours. Protective gloves and goggles are recommended. Provide eyewash, quick drench.

Safety signs

Respiratory protection
Respiratory protection must be used if air contamination exceeds acceptable level. Use respiratory equipment with gas filter, type A2.

Hand protection
Use protective gloves. Chemical resistant gloves required for prolonged or repeated contact. Gloves of nitrile rubber, PVA or Viton are recommended.

Eye / face protection
Use safety goggles or face shield in case of splash risk.

Skin protection
Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene / Environmental
Wash hands after contact.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
- Physical state: Fluid.
- Colour: Colourless.
- Odour: Odour of alcohol.
- Comments, pH (as supplied): Not relevant.
- Melting point/melting range: Value: -115 °C
- Boiling point / boiling range: Value: 78 °C
- Flash point: Value: ≤ 23 °C
- Explosion limit: Value: 2,5-13,5 %
- Vapour pressure: Value: 5,7 kPa
  Test temperature: 20 °C
- Vapour density: Value: 1,6
- Specific gravity: Value: 789 kg/m3
  Test temperature: 20 °C
- Partition coefficient: n-octanol/water: Value: -0,35
- Spontaneous combustability: Value: 425 °C
- Viscosity: Value: 1,2 mPas
  Test temperature: 20 °C

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity
Reactivity: Heating may cause a fire.

10.2. Chemical stability
Stability: Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions: Not known.
10.4. Conditions to avoid
Conditions to avoid: Avoid heat, flames and other sources of ignition.

10.5. Incompatible materials
Materials to avoid: Avoid contact with oxidising agents (e.g. nitric acid, peroxides and chromates). Strong acids.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological Information:
- Acute Toxicity (Oral LD50): mg/kg (oral rat) 7060
- Acute Toxicity (Inhalation LC50): mg/l (vapours) (4h) 124,7
- Acute Toxicity (Dermal LD50): mg/kg (ipr-rat) > 20 000

Potential acute effects
- Inhalation: In high concentrations, vapours are narcotic and may cause headache, fatigue, dizziness and nausea. (Not classified as asp. tox.)
- Skin contact: Prolonged or frequent contact may cause redness, itching, eczema and skin cracking. Defats the skin.
- Eye contact: Causes serious eye irritation. The level of response is not sufficient to trigger a classification under Directive 67/548, but sufficient to require classification according to Regulation 1272/2008.
- Ingestion: Ingestion of large amounts may cause unconsciousness. However, ingestion may cause nausea, headache, dizziness and intoxication. Ingestion may cause irritation of the gastrointestinal tract, vomiting and diarrhoea. May cause irritation to the mouth and throat.

Delayed effects / repeated exposure
- Sensitisation: Not known.
- Chronic effects: None known.

Carcinogenic, Mutagenic or Reprotoxic
- Carcinogenicity: None.
- Mutagenicity: Not known.
- Teratogenic properties: Excessive consumption of alcohol during pregnancy can cause fetal alcohol syndrome in childhood, which may induce a decrease in birth weight, birth defects and developmental disabilities. There is no evidence that such effects can be caused by exposure other than direct ingestion of alcoholic beverages. According to these data it can be concluded that such doses of ethanol that cause adverse effects on reproduction cannot be taken any other way than by the repeated consumption of a large amount of alcoholic drinks in conjunction with alcohol problems.
- Reproductive toxicity: Not known.

SECTION 12: Ecological information

12.1. Toxicity
- Acute aquatic, fish: Value: 13500 mg/l, Method of testing: LC50, Fish, species: Pimephales promelas, Duration: 96h
- Acute aquatic, algae: Value: 5000 mg/l, Method of testing: IC50, Algae, species: Scenedesmus subspicatus
12.2. Persistence and degradability
Degradation half life
- Easily biodegradable. 85% in 28 d, OECD 301D

Chemical oxygen demand (COD)
- Value: 0.4-0.8
  - Method of testing: COD

Biological oxygen demand (BOD)
- Value: 0.4-0.8
  - Method of testing: BOD

12.3. Bioaccumulative potential
Bioaccumulative potential
- Will not bio-accumulate.

Bioconcentration factor (BCF)
- Value: 0.66
  - Method of testing: BCF

12.4. Mobility in soil
Mobility
- The product is water soluble and may spread in water systems.

12.5. Results of PBT and vPvB assessment
PBT assessment results
- This substance is not classified as PBT or vPvB.

12.6. Other adverse effects
Other adverse effects / Remarks
- None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Specify the appropriate methods of disposal
- Confirm disposal procedures with environmental engineer and local regulations.
- Absorb in vermiculite or dry sand and dispose of at a licenced hazardous waste collection point. Liquid components can be disposed of by incineration.

Product classified as hazardous waste
- Yes

Packaging classified as hazardous waste
- No

SECTION 14: Transport information

14.1. UN number
ADR 1170
RID 1170
IMDG 1170
ICAO/IATA 1170

14.2. UN proper shipping name
ADR ETHANOL
RID ETHANOL
IMDG ETHANOL
ICAO/IATA ETHANOL

14.3. Transport hazard class(es)
ADR 3
Hazard no. 33
RID 3
ADN 33
IMDG 3
ICAO/IATA 3

14.4. Packing group
14.5. Environmental hazards
Comments Not relevant.

14.6. Special precautions for user
EmS F-E, S-D

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information
EC no. 200-578-6

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Legislation and regulations Dangerous Substance Directive 67/548/EEC.

15.2. Chemical safety assessment

SECTION 16: Other information

Hazard symbol

R-phrases R11 Highly flammable.
S-phrases S2 Keep out of the reach of children.

Classification according to Flam. Liq. 2; H225;
Regulation (EC) No 1272/2008 [CLP/GHS] Eye Irrit. 2; H319;
List of relevant R-phrases (under headings 2 and 3). R11 Highly flammable.
List of relevant H-phrases (Section 2 and 3). H225 Highly flammable liquid and vapour.
Responsible for safety data sheet Fred Holmberg & Co AB

Ethanol 99,9%