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

1.1. Product identifier

Product form : Substance
Substance name : Ethyl Alcohol, Denatured, Absolute
CAS No : 64-17-5
Product code : VT220
Formula : C2H6O
Synonyms : 1-hydroxyethane / ethyl hydrate / ethyl hydroxide / ethylic alcohol / industrial alcohol / methylcarbinol / neutral spirits / reagent alcohol formula 3A with isopropanol
BIG no : 10113

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

Use of the substance/mixture : Food industry: component
Chemical raw material
Cosmetic product: component
Pharmaceutical product: component
Detergent: component

1.3. Details of the supplier of the safety data sheet

Val Tech Diagnostics, A Division of LabChem Inc
Jackson's Pointe Commerce Park Building 1000
1010 Jackson's Pointe Court
Zelienople, PA 16063
T 412-826-5230
F 724-473-0647

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification
Flam. Liq. 2 H225
Acute Tox. 4 (Oral) H302
Skin Irrit. 2 H315
Eye Irrit. 2A H319
STOT SE 3 H335
STOT SE 1 H370

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

Signal word (GHS-US) : Danger
Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapour
H302 - Harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H370 - Causes damage to organs (central nervous system, optic nerve) (oral, Dermal)
Precautionary statements (GHS-US) : P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools
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P243 - Take precautionary measures against static discharge
P260 - Do not breathe mist, spray, vapours
P264 - Wash exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P301+P312 - IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P330 - If swallowed, rinse mouth
P332+P313 - If skin irritation occurs: Get medical advice/attention
P337+P313 - If eye irritation persists: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P370+P378 - In case of fire: Use carbon dioxide (CO2), powder, alcohol-resistant foam for extinction
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to comply with local, state and federal regulations
P235 - Keep cool

2.3. Other hazards
Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS-US)
No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol (CAS No)</td>
<td>(CAS No) 64-17-5</td>
<td>88 - 92</td>
<td>Flam. Liq. 2, H225, Carc. 1A, H350, Repr. 2, H361</td>
</tr>
<tr>
<td>Isopropyl Alcohol (2-Propanol)</td>
<td>(CAS No) 67-63-0</td>
<td>3.5 - 6.5</td>
<td>Flam. Liq. 2, H225, Eye Irrit. 2A, H319, STOT SE 3, H336</td>
</tr>
<tr>
<td>Methanol</td>
<td>(CAS No) 67-56-1</td>
<td>3 - 6</td>
<td>Flam. Liq. 2, H225, Acute Tox. 3 (Oral), H301, Acute Tox. 3 (Dermal), H311, Acute Tox. 3 (Inhalation), H331, STOT SE 1, H370</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures


First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact : Rinse with water. Take victim to a doctor if irritation persists.
First-aid measures after eye contact: Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.


4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Respiratory difficulties. Central nervous system depression. Symptoms similar to those listed under ingestion.

Symptoms/injuries after skin contact: Slight irritation.

Symptoms/injuries after eye contact: Redness of the eye tissue. Lacrimation. ON CONTINUOUS EXPOSURE/CONTACT: Irritation of the eye tissue.


4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media


Unsuitable extinguishing media: Solid water jet ineffective as extinguishing medium.

5.2. Special hazards arising from the substance or mixture

Fire hazard: DIRECT FIRE HAZARD. Highly flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Reactions involving a fire hazard: see "Reactivity Hazard".

Explosion hazard: DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. May be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".

Reactivity: Upon combustion: CO and CO2 are formed. Reacts violently with many compounds e.g.; with (strong) oxidizers: (increased) risk of fire/explosion. Violent to explosive reaction with (some) acids.

5.3. Advice for firefighters

Firefighting instructions: Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat.


SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

6.1.1. For non-emergency personnel


6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection. Avoid breathing mist, Vapors, spray.

Emergency procedures: Ventilate area.
6.2. Environmental precautions
Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up
For containment: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapour with water curtain. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.

Methods for cleaning up: Take up liquid spill into a non combustible material e.g.: sand, earth, vermiculite or kieselguhr, powdered limestone. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe normal hygiene standards. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

Hygiene measures: Wash exposed skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities
Technical measures: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/… equipment.

Storage conditions: Keep container tightly closed. Keep only in the original container in a cool, well ventilated place away from: Direct sunlight, Heat sources, Ignition sources, incompatible materials. Keep in fireproof place.


Incompatible materials: Sources of ignition. Direct sunlight. Heat sources.

Heat and ignition sources: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. water/moisture.

Storage area: Keep out of direct sunlight. Store in a dry area. Ventilation at floor level. Fireproof storeroom. Provide for an automatic sprinkler system. Provide for a tub to collect spills. Provide the tank with earthing. Meet the legal requirements.

Special rules on packaging: SPECIAL REQUIREMENTS: closing. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials: SUITABLE MATERIAL: stainless steel. aluminium. iron. copper. nickel. synthetic material. glass.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>USA OSHA OSHA PEL (TWA) (mg/m³)</th>
<th>USA OSHA OSHA PEL (TWA) (ppm)</th>
<th>USA ACGIH ACGIH TWA (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol, Denatured, Absolute (64-17-5)</td>
<td>1900 mg/m³</td>
<td>1000 ppm</td>
<td>200 ppm</td>
</tr>
<tr>
<td>Ethanol (64-17-5)</td>
<td>1900 mg/m³</td>
<td>1000 ppm</td>
<td>200 ppm</td>
</tr>
<tr>
<td>Isopropyl Alcohol (2-Propanol) (67-63-0)</td>
<td>1900 mg/m³</td>
<td>1000 ppm</td>
<td>200 ppm</td>
</tr>
</tbody>
</table>
Ethyl Alcohol, Denatured, Absolute

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Isopropyl Alcohol (2-Propanol) (67-63-0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USA ACGIH</strong></td>
</tr>
<tr>
<td><strong>USA OSHA</strong></td>
</tr>
<tr>
<td><strong>USA OSHA</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methanol (67-56-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USA ACGIH</strong></td>
</tr>
<tr>
<td><strong>USA ACGIH</strong></td>
</tr>
<tr>
<td><strong>USA OSHA</strong></td>
</tr>
<tr>
<td><strong>USA OSHA</strong></td>
</tr>
</tbody>
</table>

### 8.2. Exposure controls

Appropriate engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.

Personal protective equipment: Avoid all unnecessary exposure.


Hand protection: Gloves.

Eye protection: Safety glasses.

Skin and body protection: Protective clothing.

Respiratory protection: Wear gas mask with filter type A if conc. in air > exposure limit.

Other information: Do not eat, drink or smoke during use.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

- **Physical state**: Liquid
- **Appearance**: Liquid.
- **Molecular mass**: 46.07 g/mol
- **Colour**: Colourless.
- **Odour**: Alcohol odour. Pleasant odour.
- **Odour threshold**: 100 ppm, 188 mg/m³
- **pH**: No data available
- **Relative evaporation rate (butylacetate=1)**: 2.4
- **Relative evaporation rate (ether=1)**: 8.3
- **Melting point**: -115 °C
- **Freezing point**: No data available
- **Boiling point**: 78 °C
- **Flash point**: 13 °C
- **Critical temperature**: 243 °C
- **Self ignition temperature**: 363 °C
- **Decomposition temperature**: No data available
- **Flammability (solid, gas)**: No data available
- **Vapour pressure**: 59 hPa
- **Vapour pressure at 50 °C**: 300 hPa
- **Critical pressure**: 63840 hPa
- **Relative vapour density at 20 °C**: 1.6
- **Relative density**: 0.79
- **Relative density of saturated gas/air mixture**: 1.04
- **Density**: 790 kg/m³
Ethyl Alcohol, Denatured, Absolute
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Water: Complete
Ethanol: Not applicable
Acetone: Complete

Log Pow: -0.31 (Experimental value)

Solvent properties:
- Ethanol: Not applicable
- Ether: Complete
- Acetone: Complete

Explosive properties: No data available.
Oxidising properties: None.
Explosive limits: 3.3 - 19.0 vol %
67 - 290 g/m³

9.2. Other information
Specific conductivity: 130000 pS/m
Saturation concentration: 112 g/m³
VOC content: 100 %
Other properties: Gas/vapour heavier than air at 20°C. Clear. Hygroscopic. Volatile. Substance has neutral reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity
Upon combustion: CO and CO₂ are formed. Reacts violently with many compounds e.g.: with (strong) oxidizers: (increased) risk of fire/explosion. Violent to explosive reaction with (some) acids.

10.2. Chemical stability
Hygroscopic.

10.3. Possibility of hazardous reactions
Not established.

10.4. Conditions to avoid
Direct sunlight. Extremely high or low temperatures. Open flame.

10.5. Incompatible materials

10.6. Hazardous decomposition products
Carbon monoxide. Carbon dioxide. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Harmful if swallowed.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Route</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol, Denatured, Absolute (64-17-5)</td>
<td>LD50 oral rat</td>
<td>10740 mg/kg bodyweight (Rat; Experimental value)</td>
</tr>
<tr>
<td></td>
<td>LD50 dermal rabbit</td>
<td>&gt; 16000 mg/kg (Rabbit)</td>
</tr>
<tr>
<td>Ethanol (64-17-5)</td>
<td>LD50 oral rat</td>
<td>10740 mg/kg (Rat; Experimental value)</td>
</tr>
<tr>
<td></td>
<td>LD50 dermal rabbit</td>
<td>&gt; 16000 mg/kg (Rabbit)</td>
</tr>
<tr>
<td>Isopropyl Alcohol (2-Propanol) (67-63-0)</td>
<td>LD50 oral rat</td>
<td>5045 mg/kg (5840 mg/kg bodyweight; Rat; Experimental value)</td>
</tr>
<tr>
<td></td>
<td>LD50 dermal rabbit</td>
<td>12870 mg/kg (16.4; Rabbit; Experimental value)</td>
</tr>
<tr>
<td></td>
<td>LC50 inhalation rat</td>
<td>73 mg/l/4h (Rat)</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td>LD50 oral rat</td>
<td>&gt; 5000 mg/kg (1187-2769 mg/kg bodyweight; Rat; Rat)</td>
</tr>
</tbody>
</table>
Ethyl Alcohol, Denatured, Absolute
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Substance</th>
<th>LD50 dermal rabbit</th>
<th>LC50 inhalation rat (mg/l)</th>
<th>LC50 inhalation rat (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (67-56-1)</td>
<td>15800 mg/kg (Rabbit)</td>
<td>85 mg/l/4h (Rate)</td>
<td>64000 ppm/4h (Rate)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/irritation: Causes serious eye irritation.
Respiratory or skin sensitisation: Not classified
Germ cell mutagenicity: Not classified

Based on available data, the classification criteria are not met

Carcinogenicity: Not classified

Ethyl Alcohol, Denatured, Absolute (64-17-5)
IARC group 1 - Carcinogenic to humans

Ethanol (64-17-5)
IARC group 1 - Carcinogenic to humans

Isopropyl Alcohol (2-Propanol) (67-63-0)
IARC group 3 - Not classifiable

Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): May cause respiratory irritation. Causes damage to organs (central nervous system, optic nerve) (oral, Dermal).
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Potential Adverse human health effects and symptoms: Harmful if swallowed. Based on available data, the classification criteria are not met
Symptoms/injuries after inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Respiratory difficulties. Central nervous system depression. Symptoms similar to those listed under ingestion.
Symptoms/injuries after skin contact: Slight irritation.
Symptoms/injuries after eye contact: Redness of the eye tissue. Lacrimation. ON CONTINUOUS EXPOSURE/CONTACT: Irritation of the eye tissue.

SECTION 12: Ecological information

12.1. Toxicity
Ecology - general: Classification concerning the environment: not applicable.
Ecology - air: TA-Luft Klasse 5.2.5.
Ecology - water: Not harmful to fishes (LC50(96h) >1000 mg/l). Not harmful to invertebrates (Daphnia). Slightly harmful to algae (EC50 (72h): 100 - 1000 mg/l). Not harmful to bacteria (EC50 >1000 mg/l). Inhibition of activated sludge.

Ethyl Alcohol, Denatured, Absolute (64-17-5)
LC50 fishes 1 14200 mg/l (96 h; Pimephales promelas; Nominal concentration)
EC50 Daphnia 1 9300 mg/l (48 h; Daphnia magna)
LC50 fish 2 13000 mg/l 96 h; Salmo gairdneri (Onchorhynchus mykiss)

03/25/2014 EN (English) 7/12
### Ethyl Alcohol, Denatured, Absolute (64-17-5)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 Daphnia 2</td>
<td>10800 mg/l (24 h; <em>Daphnia magna</em>)</td>
</tr>
<tr>
<td>Threshold limit other aquatic organisms 1</td>
<td>65 mg/l (72 h; <em>Protozoa</em>)</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
<td>1450 mg/l (192 h; <em>Microcystis aeruginosa</em>; Growth rate)</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
<td>5000 mg/l (168 h; <em>Scenedesmus quadricauda</em>; Growth rate)</td>
</tr>
</tbody>
</table>

### Ethanol (64-17-5)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fishes 1</td>
<td>14200 mg/l (96 h; <em>Pimephales promelas</em>; Nominal concentration)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>9300 mg/l (48 h; <em>Daphnia magna</em>)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>13000 mg/l (96 h; <em>Salmo gairdneri</em> (<em>Oncorhynchus mykiss</em>))</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
<td>10800 mg/l (24 h; <em>Daphnia magna</em>)</td>
</tr>
<tr>
<td>Threshold limit other aquatic organisms 1</td>
<td>65 mg/l (72 h; <em>Protozoa</em>)</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
<td>1450 mg/l (192 h; <em>Microcystis aeruginosa</em>; Growth rate)</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
<td>5000 mg/l (168 h; <em>Scenedesmus quadricauda</em>; Growth rate)</td>
</tr>
</tbody>
</table>

### Isopropyl Alcohol (2-Propanol) (67-63-0)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fishes 1</td>
<td>4200 mg/l (96 h; <em>Rasbora heteromorpha</em>; Flow-through system)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>&gt; 10000 mg/l (48 h; <em>Daphnia magna</em>)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>9640 mg/l (96 h; <em>Pimephales promelas</em>; Lethal)</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
<td>13299 mg/l (48 h; <em>Daphnia magna</em>)</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
<td>&gt; 1000 mg/l (72 h; <em>Scenedesmus subspicatus</em>; Growth rate)</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
<td>1800 mg/l (72 h; <em>Algae</em>; Cell numbers)</td>
</tr>
</tbody>
</table>

### Methanol (67-56-1)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fishes 1</td>
<td>15400 mg/l (96 h; <em>Lepomis macrochirus</em>; Lethal)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>&gt; 10000 mg/l (48 h; <em>Daphnia magna</em>; Lethal)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>10800 mg/l (96 h; <em>Salmo gairdneri</em> (<em>Oncorhynchus mykiss</em>))</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
<td>24500 mg/l (48 h; <em>Daphnia magna</em>)</td>
</tr>
<tr>
<td>Threshold limit other aquatic organisms 1</td>
<td>6600 mg/l (16 h; <em>Pseudomonas putida</em>)</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
<td>530 mg/l (192 h; <em>Microcystis aeruginosa</em>)</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
<td>8000 mg/l (168 h; <em>Scenedesmus quadricauda</em>)</td>
</tr>
</tbody>
</table>

### 12.2. Persistence and degradability

#### Ethyl Alcohol, Denatured, Absolute (64-17-5)

- **Persistence and degradability**: Readily biodegradable in water. Biodegradable in the soil. No (test)data on mobility of the substance available.
- **Biochemical oxygen demand (BOD)**: 0.8 - 0.967 g O²/g substance
- **Chemical oxygen demand (COD)**: 1.70 g O²/g substance
- **ThOD**: 2.10 g O²/g substance
- **BOD (% of ThOD)**: 0.43 % ThOD

#### Ethanol (64-17-5)

- **Persistence and degradability**: Readily biodegradable in water. Biodegradable in the soil. No (test)data on mobility of the substance available.
- **Biochemical oxygen demand (BOD)**: 0.8 - 0.967 g O²/g substance
- **Chemical oxygen demand (COD)**: 1.70 g O²/g substance
- **ThOD**: 2.10 g O²/g substance
- **BOD (% of ThOD)**: 0.43 % ThOD

#### Isopropyl Alcohol (2-Propanol) (67-63-0)

- **Persistence and degradability**: Readily biodegradable in water. Biodegradable in the soil. Biodegradable in the soil under anaerobic conditions. No (test)data on mobility of the substance available.
- **Biochemical oxygen demand (BOD)**: 1.19 g O²/g substance
- **Chemical oxygen demand (COD)**: 2.23 g O²/g substance
- **ThOD**: 2.40 g O²/g substance
- **BOD (% of ThOD)**: 0.49 % ThOD

#### Methanol (67-56-1)

- **Persistence and degradability**: Readily biodegradable in water. Biodegradable in the soil.
- **Biochemical oxygen demand (BOD)**: 0.6 - 1.12 g O²/g substance
### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Compound</th>
<th>Log Pow</th>
<th>Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol, Denatured, Absolute (64-17-5)</td>
<td>-0.31 (Experimental value)</td>
<td>Low potential for bioaccumulation (Log Kow &lt; 4).</td>
</tr>
<tr>
<td>Ethanol (64-17-5)</td>
<td>-0.31 (Experimental value)</td>
<td>Low potential for bioaccumulation (Log Kow &lt; 4).</td>
</tr>
<tr>
<td>Isopropyl Alcohol (2-Propanol) (67-63-0)</td>
<td>0.05 (Experimental value)</td>
<td>Low potential for bioaccumulation (Log Kow &lt; 4).</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td>-0.77 (Experimental value)</td>
<td>Low potential for bioaccumulation (BCF &lt; 500).</td>
</tr>
</tbody>
</table>

### 12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Compound</th>
<th>Surface tension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol, Denatured, Absolute (64-17-5)</td>
<td>0.022 N/m (20 °C)</td>
</tr>
<tr>
<td>Ethanol (64-17-5)</td>
<td>0.022 N/m (20 °C)</td>
</tr>
<tr>
<td>Isopropyl Alcohol (2-Propanol) (67-63-0)</td>
<td>0.021 N/m (25 °C)</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td>0.023 N/m (20 °C)</td>
</tr>
</tbody>
</table>

### 12.5. Other adverse effects

Other information : Avoid release to the environment.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste disposal recommendations : Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Remove to an authorized waste incinerator for solvents with energy recovery. Do not discharge into surface water. May be discharged to wastewater treatment installation.

Additional information : LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC.

Ecology - waste materials : Avoid release to the environment.

### SECTION 14: Transport information

In accordance with DOT
Transport document description : UN1987 Alcohols, n.o.s. (Ethanol, methanol), 3, II
UN-No.(DOT) : 1987
DOT NA no. : UN1987
DOT Proper Shipping Name : Alcohols, n.o.s.
   Ethanol, methanol
Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Ethyl Alcohol, Denatured, Absolute
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Hazard labels (DOT) : 3 - Flammable liquid

Packing group (DOT) : II - Medium Danger
DOT Special Provisions (49 CFR 172.102) : 172 - This entry includes alcohol mixtures containing up to 5% petroleum products.
  IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
  T7 - 4 178.274(d)(2) Normal............. 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / (1 + a (tr - tf)) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0 C (32 F).
TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 4b;150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 60 L
DOT Vessel Stowage Location : B - (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Additional information

Other information : No supplementary information available.
State during transport (ADR-RID) : as liquid.

ADR
Transport document description : UN 1170 ethanol (ethyl alcohol), 3, II, (D/E)
Packing group (ADR) : II
Class (ADR) : 3 - Flammable liquids
Hazard identification number (Kemler No.) : 33
Classification code (ADR) : F1
Danger labels (ADR) : 3 - Flammable liquids

Orange plates : 33 1170
Tunnel restriction code : D/E

Transport by sea
UN-No. (IMDG) : 1170
Class (IMDG) : 3 - Flammable liquids
EmS-No. (1) : F-E
EmS-No. (2) : S-D
**Ethyl Alcohol, Denatured, Absolute**

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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Air transport

<table>
<thead>
<tr>
<th>UN-No.(IATA)</th>
<th>Class (IATA)</th>
<th>Packing group (IATA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1170</td>
<td>3 - Flammable Liquids</td>
<td>II - Medium Danger</td>
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</tbody>
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---

**SECTION 15: Regulatory information**

**15.1. US Federal regulations**

<table>
<thead>
<tr>
<th>SARA Section 311/312 Hazard Classes</th>
<th>Immediate (acute) health hazard</th>
<th>Delayed (chronic) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol, Denatured, Absolute (64-17-5)</td>
<td>Fire hazard</td>
<td></td>
</tr>
<tr>
<td>Isopropyl Alcohol (2-Propanol) (67-63-0)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td>Listed on SARA Section 313 (Specific toxic chemical listings)</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td>Listed on SARA Section 313 (Specific toxic chemical listings)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RQ (Reportable quantity, section 304 of EPA's List of Lists) :</th>
<th>5000 lb</th>
</tr>
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<tbody>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
<td>Immediate (acute) health hazard</td>
</tr>
</tbody>
</table>

**15.2. International regulations**

**CANADA**

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Class B Division 2 - Flammable Liquid</th>
<th>Class D Division 2 Subdivision A - Very toxic material causing other toxic effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol, Denatured, Absolute (64-17-5)</td>
<td></td>
<td>Class D Division 2 Subdivision B - Toxic material causing other toxic effects</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Class B Division 2 - Flammable Liquid</th>
<th>Class D Division 2 Subdivision B - Toxic material causing other toxic effects</th>
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<tbody>
<tr>
<td>Isopropyl Alcohol (2-Propanol) (67-63-0)</td>
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</table>

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<th>WHMIS Classification</th>
<th>Class B Division 2 - Flammable Liquid</th>
<th>Class D Division 2 Subdivision A - Very toxic material causing other toxic effects</th>
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<tr>
<td>Methanol (67-56-1)</td>
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</tr>
</tbody>
</table>

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**EU-Regulations**

No additional information available

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

Flam. Liq. 2 H225

Full text of H-phrases: see section 16

**Classification according to Directive 67/548/EEC or 1999/45/EC**

F; R11

Full text of R-phrases: see section 16

**15.2.2. National regulations**

<table>
<thead>
<tr>
<th>WHMIS Classification</th>
<th>Class B Division 2 - Flammable Liquid</th>
<th>Class D Division 2 Subdivision A - Very toxic material causing other toxic effects</th>
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<tbody>
<tr>
<td>Methanol (67-56-1)</td>
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**15.3. US State regulations**

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### Ethanol (64-17-5)

<table>
<thead>
<tr>
<th>U.S. - California - Proposition 65 - Carcinogens List</th>
<th>U.S. - California - Proposition 65 - Developmental Toxicity</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>No significance risk level (NSRL)</th>
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<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
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</table>

### Methanol (67-56-1)

<table>
<thead>
<tr>
<th>U.S. - California - Proposition 65 - Carcinogens List</th>
<th>U.S. - California - Proposition 65 - Developmental Toxicity</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>No significance risk level (NSRL)</th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SECTION 16: Other information**

**Indication of changes**: Revision - See : *.

**Other information**: None.

Full text of H-phrases: see section 16:

- **Acute Tox. 3 (Dermal)**: Acute toxicity (dermal), Category 3
- **Acute Tox. 3 (Inhalation)**: Acute toxicity (inhal.), Category 3
- **Acute Tox. 3 (Oral)**: Acute toxicity (oral), Category 3
- **Acute Tox. 4 (Oral)**: Acute toxicity (oral), Category 4
- **Carc. 1A**: Carcinogenicity, Category 1A
- **Eye Irrit. 2A**: Serious eye damage/eye irritation, Category 2A
- **Flam. Liq. 2**: Flammable liquids, Category 2
- **Repr. 2**: Reproductive toxicity, Category 2
- **Skin Irrit. 2**: Skin corrosion/irritation, Category 2
- **STOT SE 1**: Specific target organ toxicity — single exposure, Category 1
- **STOT SE 3**: Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
- **STOT SE 3**: Specific target organ toxicity — Single exposure, Category 3, Narcosis
- **H225**: Highly flammable liquid and vapour
- **H301**: Toxic if swallowed
- **H302**: Harmful if swallowed
- **H311**: Toxic in contact with skin
- **H315**: Causes skin irritation
- **H319**: Causes serious eye irritation
- **H331**: Toxic if inhaled
- **H335**: May cause respiratory irritation
- **H336**: May cause drowsiness or dizziness
- **H350**: May cause cancer
- **H361**: Suspected of damaging fertility or the unborn child
- **H370**: Causes damage to organs

**NFPA health hazard**: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

**NFPA fire hazard**: 3 - Liquids and solids that can be ignited under almost all ambient conditions.

**NFPA reactivity**: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

**SDS US ValTech**

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