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

1.1. Product identifier

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade name</td>
<td>METHANOL</td>
</tr>
<tr>
<td>Chemical name</td>
<td>Methanol</td>
</tr>
<tr>
<td>CAS No</td>
<td>67-56-1</td>
</tr>
<tr>
<td>Product code</td>
<td>24900</td>
</tr>
<tr>
<td>Formula</td>
<td>CH4O</td>
</tr>
<tr>
<td>BIG no</td>
<td>10029</td>
</tr>
</tbody>
</table>

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

Use of the substance/mixture: Solvent

1.3. Details of the supplier of the safety data sheet

Pilot Thomas Logistics
777 Main Street, Suite 2000
Fort Worth, TX 76102 United States
T 817-877-8300
www.pilotthomas.com

1.4. Emergency telephone number

Emergency number: For 24-Hour Emergency Information Call: 1-800-633-8523 Customer # 1898

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

| Flam. Liq. | H225 |

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US): ![GHS02]

Signal word (GHS-US): Danger

Hazard statements (GHS-US): H225 - Highly flammable liquid and vapor

Precautionary statements (GHS-US):

- 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, lighting, ventilating equipment
- P242 - Use only non-sparking tools
- P243 - Take precautionary measures against static discharge
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
- P370+P378 - In case of fire: Use ABC-powder, alcohol resistant foam, carbon dioxide (CO2), Water to extinguish
- P403+P235 - Store in a well-ventilated place. Keep cool
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P501 - Dispose of contents/container to a hazardous or special waste collection point, an approved waste disposal plant, an authorized waste collection point, an industrial incineration plant, hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHANOL (Main constituent)</td>
<td>(CAS No) 67-56-1</td>
<td>100</td>
<td>Flam. Liq. 2, H225</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. Immediately consult a doctor/medical service.

First-aid measures after skin contact: Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Remove clothing before washing. Consult a doctor/medical service.

First-aid measures after eye contact: Rinse with water. Take victim to an ophthalmologist if irritation persists.


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

Symptoms/injuries after inhalation: Slight irritation. EXPOSURE TO HIGH CONCENTRATIONS: Coughing. Symptoms similar to those listed under ingestion.

Symptoms/injuries after skin contact: Symptoms similar to those listed under ingestion. Slight irritation.

Symptoms/injuries after eye contact: Redness of the eye tissue. Lacrimation.


4.3. Indication of any immediate medical attention and special treatment needed
Hospitalize at once. Until victim can be cared for by specialized staff:

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.

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## 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
- On heating: release of toxic/corrosive/combustible gases/vapours (formaldehyde). Upon combustion: CO and CO2 are formed. Violent to explosive reaction with (some) metal powders and with (strong) oxidizers. Violent exothermic reaction with (some) acids and with (some) halogens compounds.

## 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. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel
- **Protective equipment**: Gas-tight suit. See "Material-Handling" to select protective clothing.

#### 6.1.2. For emergency responders
- No additional information available

### 6.2. Environmental precautions
- Prevent soil and water pollution. 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 combustible/toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. 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 slaked lime or soda ash. 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
- No additional information available

## 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 strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Heat-ignition
- KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

#### Prohibitions on mixed storage

#### Storage area

#### 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: steel, stainless steel, iron, glass. MATERIAL TO AVOID: lead, aluminium, zinc, polyethylene, PVC.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>METHANOL (67-56-1)</th>
<th>ACGIH</th>
<th>ACGIH TWA (ppm)</th>
<th>200 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>ACGIH STEL (ppm)</td>
<td>250 ppm</td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>Remark (ACGIH)</td>
<td>Headache; eye dam; dizziness; nausea</td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>260 mg/m³</td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
<td>200 ppm</td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Materials for protective clothing


Hand protection

Gloves.

Eye protection

Combined eye and respiratory protection. Safety glasses.

Skin and body protection

Head/neck protection. Protective clothing.

Respiratory protection

Gas mask with filter type AX at conc. in air > exposure limit. Wear gas mask with filter type A if conc. in air > exposure limit. High vapour/gas concentration: self-contained respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid

Appearance

Liquid.

Color

Colourless

Odor

Characteristic odour Mild odour Pleasant odour Alcohol odour Commercial/unpurified substance: Imitating/pungent odour

Odor threshold

2000 - 8800 ppm

2620 - 11528 mg/m³

pH

No data available

Melting point

-98 °C

Freezing point

No data available

Boiling point

65 °C (1013 hPa)

Critical temperature

240 °C

Critical pressure

79547 hPa

Flash point

9.7 °C (1013 hPa)

Relative evaporation rate (butyl acetate=1)

4.1

Relative evaporation rate (ether=1)

6.3

Flammability (solid, gas)

No data available

Explosion limits

5.5 - 36.5 vol %

Explosive properties

No data available

Oxidizing properties

No data available

Vapor pressure

128 hPa

Vapor pressure at 50 °C

552 hPa

Relative density

0.79-0.80,20 °C

Relative vapor density at 20 °C

1.1

Relative density of saturated gas/air mixture

1.0

Specific gravity / density

792 kg/m³

Molecular mass

32.04 g/mol

Log Pow : -0.77 (Experimental value; Other)

Log Kow : No data available

Auto-ignition temperature : 455 °C (1013 hPa)

Decomposition temperature : No data available

Viscosity : No data available

Viscosity, kinematic : No data available

Viscosity, dynamic : 0.544 - 0.59 mPa.s (25 °C)

9.2. Other information

Minimum ignition energy : 0.14 mJ

Saturation concentration : 166 g/m³

VOC content : 100 %

Other properties : Clear. Hygroscopic. Volatile. Substance has neutral reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

On heating: release of toxic/corrosive/combustible gases/vapours (formaldehyde). Upon combustion: CO and CO2 are formed. Violent to explosive reaction with (some) metal powders and with (strong) oxidizers. Violent exothermic reaction with (some) acids and with (some) halogens compounds.

10.2. Chemical stability

Hygroscopic.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

METHANOL (67-56-1)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>&gt; 5000 mg/kg (Rat; BASF test; Literature study; 1187-2769 mg/kg bodyweight; Rat; Weight of evidence)</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>15800 mg/kg (Rabbit; Literature study)</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
<td>85 mg/l/4h (Rat; Literature study)</td>
</tr>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>64000 ppm/4h (Rat; Literature study)</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>15800.000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>64000.000 ppmV/4h</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>85.000 mg/l/4h</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>85.000 mg/l/4h</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified
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Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Slight irritation. EXPOSURE TO HIGH CONCENTRATIONS: Coughing. Symptoms similar to those listed under ingestion.

Symptoms/injuries after skin contact : Symptoms similar to those listed under ingestion. Slight irritation.

Symptoms/injuries after eye contact : Redness of the eye tissue. Lacrimation.


### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008. Not classified as dangerous for the environment according to the criteria of Directive 67/548/EEC.

Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). None of the known components is included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5/I.

Ecology - water : Not harmful to fish (LC50(96h) >1000 mg/l). Not harmful to invertebrates (Daphnia) (EC50 (48h) > 1000 mg/l). Not harmful to algae (EC50 >1000 mg/l). Slightly harmful to bacteria (EC50: 100 - 1000 mg/l). Inhibition of activated sludge.

<table>
<thead>
<tr>
<th>METHANOL (67-56-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
</tr>
<tr>
<td>LC50 fish 2</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
</tr>
<tr>
<td>Threshold limit other aquatic organisms 1</td>
</tr>
<tr>
<td>Threshold limit algae 1</td>
</tr>
<tr>
<td>Threshold limit algae 2</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>METHANOL (67-56-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemical oxygen demand (BOD)</td>
</tr>
<tr>
<td>Chemical oxygen demand (COD)</td>
</tr>
<tr>
<td>ThOD</td>
</tr>
<tr>
<td>BOD (% of ThOD)</td>
</tr>
</tbody>
</table>

#### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>METHANOL (67-56-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCF fish 1</td>
</tr>
<tr>
<td>BCF fish 2</td>
</tr>
<tr>
<td>Log Pow</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
</tr>
</tbody>
</table>

#### 12.4. Mobility in soil

<table>
<thead>
<tr>
<th>METHANOL (67-56-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tension</td>
</tr>
</tbody>
</table>

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12.5. Other adverse effects
No additional information available

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. Incinerate under surveillance with energy recovery. Do not discharge into drains or the environment. Obtain the consent of pollution control authorities before discharging to wastewater treatment plants.

Additional information: LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT
Transport document description: UN1230 Methanol, 3, (6.1), II
UN-No.(DOT): UN1230
Proper Shipping Name (DOT): Methanol
Department of Transportation (DOT) Hazard Classes: 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT): 3 - Flammable liquid 6.1 - Poison inhalation hazard

Packing group (DOT): II - Medium Danger
DOT Packaging Non Bulk (49 CFR 173.xxx): 202
DOT Packaging Bulk (49 CFR 173.xxx): 242
DOT Symbols: + - Fixes (cannot be altered) proper shipping name, hazard class, and packing group, I - Proper shipping name appropriate for international and domestic transportation
DOT Special Provisions (49 CFR 172.102): 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. TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.

DOT Packaging Exceptions (49 CFR 173.xxx): 150
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): 1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 173.75): 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.

DOT Vessel Stowage Other: 40 - Stow “clear of living quarters”
Additional information

Emergency Response Guide (ERG) Number : 131
Other information : No supplementary information available.

ADR
Transport document description : UN 1230, 3 (6.1), II, (D/E)
Packing group (ADR) : II
Class (ADR) : 3 - Flammable liquid
Hazard identification number (Kemler No.) : 336
Classification code (ADR) : FT1
Hazard labels (ADR) : 3 - Flammable liquids
6.1 - Toxic substances

Orange plates :

Tunnel restriction code (ADR) : D/E

Transport by sea
UN-No. (IMDG) : 1230
Class (IMDG) : 3 - Flammable liquids
Subsidiary risks (IMDG) : 6.1
EmS-No. (1) : F-E
MFAG-No : 19
EmS-No. (2) : S-D

Air transport
UN-No.(IATA) : 1230
Class (IATA) : 3 - Flammable Liquids
Packing group (IATA) : II - Medium Danger
Subsidiary risks (IATA) : 6.1

SECTION 15: Regulatory information

15.1. US Federal regulations

METHANOL (67-56-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on United States SARA Section 313
RQ (Reportable quantity, section 304 of EPA’s List of Lists) : 5000 lb

15.2. International regulations

CANADA
No additional information available

EU-Regulations
No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Flam. Liq. 2 : H225
Acute Tox. 3 (Inhalation) : H331
Acute Tox. 3 (Dermal) : H311
Acute Tox. 3 (Oral) : H301
STOT SE 1 : H370
Full text of H-phrases: see section 16
Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

F: R11
T: R23/24/25
T: R39/23/24/25

Full text of R-phrases: see section 16

National regulations
No additional information available

15.3. US State regulations

<table>
<thead>
<tr>
<th>METHANOL(67-56-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>Yes</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</td>
<td>No</td>
</tr>
<tr>
<td>State or local regulations</td>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td></td>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td></td>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Revision date : 06/02/2015

Full text of H-phrases:

| Flam. Liq. 2 | Flammable liquids Category 2 |
| H225         | Highly flammable liquid and vapor |

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.
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<table>
<thead>
<tr>
<th>HMIS III Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2 Moderate Hazard - Temporary or minor injury may occur</td>
</tr>
<tr>
<td>Flammability</td>
<td>3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F. (Classes IB &amp; IC)</td>
</tr>
<tr>
<td>Physical</td>
<td>0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>D - Face shield and eye protection, Gloves, Synthetic apron</td>
</tr>
</tbody>
</table>

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