1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Methanol
Product Number: 34860
Brand: Sigma-Aldrich
Supplier: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone: +1 800-325-5832
Fax: +1 800-325-5052
Emergency Phone #: (314) 776-6555
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable liquid, Target Organ Effect, Toxic by ingestion, Toxic by skin absorption, Irritant

Target Organs
Eyes, Kidney, Liver, Heart, Central nervous system

GHS Classification
Flammable liquids (Category 2)
Acute toxicity, Oral (Category 3)
Acute toxicity, Dermal (Category 3)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 1)

GHS Label elements, including precautionary statements

Pictogram
Signal word: Danger

Hazard statement(s)
H225: Highly flammable liquid and vapour.
H301 + H311: Toxic if swallowed or in contact with skin
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H370: Causes damage to organs.

Precautionary statement(s)
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260: Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280: Wear protective gloves/ protective clothing.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if
present and easy to do. Continue rinsing.

P307 + P311
IF exposed: Call a POISON CENTER or doctor/physician.

HMIS Classification
Health hazard: 2
Chronic Health Hazard: *
Flammability: 3
Physical hazards: 0

NFPA Rating
Health hazard: 2
Fire: 3
Reactivity Hazard: 0

Potential Health Effects
Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin Toxic if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Synonyms: Methyl alcohol

Formula: CH₄O
Molecular Weight: 32.04 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
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</thead>
<tbody>
<tr>
<td>Methanol</td>
<td></td>
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<tr>
<td>CAS-No.</td>
<td>67-56-1</td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-659-6</td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-001-00-X</td>
</tr>
<tr>
<td>Registration number</td>
<td>01-2119433307-44-XXXX</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self-contained breathing apparatus for fire fighting if necessary.
Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSO NAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>TWA</td>
<td>200 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Remarks
Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption

<table>
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<tr>
<th>STEL</th>
<th>250 ppm</th>
<th>USA. ACGIH Threshold Limit Values (TLV)</th>
</tr>
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</table>

Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption

| TWA        | 200 ppm 260 mg/m3 | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |

Skin notation

| STEL       | 250 ppm 325 mg/m3 | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |

Skin notation

| TWA        | 200 ppm 260 mg/m3 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |

The value in mg/m3 is approximate.

| TWA        | 200 ppm 260 mg/m3 | USA. NIOSH Recommended Exposure Limits |

Potential for dermal absorption
### Personal protective equipment

#### 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).

#### Hand protection
Handle with gloves. 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.

- **Immersion protection**
  - Material: butyl-rubber
  - Minimum layer thickness: 0.3 mm
  - Break through time: > 480 min
  - Material tested:Butoject® (Aldrich Z677647, Size M)

- **Splash protection**
  - Material: Nitrile rubber
  - Minimum layer thickness: 0.4 mm
  - Break through time: > 30 min
  - Material tested:Camatril® (Aldrich Z677442, Size M)

- **Material tested:** Butyl rubber, Minimum layer thickness: 0.3 mm, Break through time: > 480 min, Material tested: Butoject® (Aldrich Z677647, Size M)

- **Material tested:** Nitrile rubber, Minimum layer thickness: 0.4 mm, Break through time: > 30 min, Material tested: Camatril® (Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin and 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.

#### Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance
- **Form:** liquid
- **Colour:** colourless

#### Safety data
- **pH:** no data available
- **Melting point/freezing point:** Melting point/range: -98 °C (-144 °F)
- **Boiling point:** 64.7 °C (148.5 °F)
- **Flash point:** 9.7 °C (49.5 °F) - closed cup
- **Ignition temperature:** 455 °C (851 °F)
Autoignition temperature: 455.0 °C (851.0 °F) at 1,013 hPa (760 mmHg)
Lower explosion limit: 6 % (V)
Upper explosion limit: 36 % (V)
Vapour pressure: 130.3 hPa (97.7 mmHg) at 20.0 °C (68.0 °F)
Density: 0.791 g/mL at 25 °C (77 °F)
Water solubility: completely miscible
Partition coefficient: log Pow: -0.77
Relative vapour density: no data available
Odour: pungent
Odour Threshold: no data available
Evaporation rate: no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Vapours may form explosive mixture with air.

Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid
Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50
LD50 Oral - rat - 5,628 mg/kg

Inhalation LC50
LC50 Inhalation - rat - 4 h - 64000 ppm
LC50 Inhalation - rat - 4 h - 87.6 mg/l

Dermal LD50
LD50 Dermal - rabbit - 15,800 mg/kg

Other information on acute toxicity
no data available

Skin corrosion/irritation
Skin - rabbit - No skin irritation

Serious eye damage/eye irritation
Eyes - rabbit - No eye irritation

Respiratory or skin sensitization
guinea pig - OECD Test Guideline 406 - Does not cause skin sensitization.

Germ cell mutagenicity
Genotoxicity in vitro - Non-mammalian - Other cell types - negative
Genotoxicity in vivo - mouse - male and female - Intraperitoneal - negative

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
Causes damage to organs.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion Toxic if swallowed.
Skin Toxic if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.

Signs and Symptoms of Exposure
Methyl alcohol may be fatal or cause blindness if swallowed. Cannot be made non-poisonous. Effects due to ingestion may include; Nausea, Headache, Vomiting, Gastrointestinal disturbance, Dizziness, Weakness, Confusion, Drowsiness, Unconsciousness, May cause convulsions.

Synergistic effects
no data available

Additional Information
Repeated dose toxicity - Monkey - Gavage - 72 h - Lowest observed adverse effect level - 2,340 mg/kg
RTECS: PC1400000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish LC50 - Oncorhynchus mykiss (rainbow trout) - 19,000.00 mg/l - 96 h mortality LC50 - Lepomis macrochirus (Bluegill) - 15,400 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 24,500.00 mg/l - 48 h
EC100 - Daphnia magna (Water flea) - 10,000.00 mg/l - 24 h
Toxicity to algae Growth inhibition EC50 - Scenedesmus capricornutum (fresh water algae) - 22,000 mg/l - 96 h

**Persistence and degradability**
- Biodegradability
  - aerobic
  - Result: 72 % - rapidly biodegradable

**Bioaccumulative potential**
- Bioaccumulation Cyprinus carpio (Carp) - 72 d at 20 °C
  - Bioconcentration factor (BCF): 1.0

**Mobility in soil**
Will not adsorb on soil.

**PBT and vPvB assessment**
- no data available

**Other adverse effects**
- no data available

### 13. DISPOSAL CONSIDERATIONS

**Product**
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**
Dispose of as unused product.

### 14. TRANSPORT INFORMATION

**DOT (US)**
- UN number: 1230  Class: 3  Packing group: II
- Proper shipping name: Methanol
- Reportable Quantity (RQ): 5000 lbs
- Marine pollutant: No
- Poison Inhalation Hazard: No

**IMDG**
- UN number: 1230  Class: 3 (6.1)  Packing group: II  EMS-No: F-E, S-D
- Proper shipping name: METHANOL
- Marine pollutant: No

**IATA**
- UN number: 1230  Class: 3 (6.1)  Packing group: II
- Proper shipping name: Methanol

### 15. REGULATORY INFORMATION

**OSHA Hazards**
Flammable liquid, Target Organ Effect, Toxic by ingestion, Toxic by skin absorption, Irritant

**SARA 302 Components**
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**
The following components are subject to reporting levels established by SARA Title III, Section 313:

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SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
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