

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

**1.1 Product identifier**

|              |  |
|--------------|--|
| Product name | METHYL-t-BUTYL ETHER                   |
| CAS-No.      | 1634-04-4                              |
| Product code | AR1125, CG1125, GP1125, LC1125, RP1125 |

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

|                 |                                       |
|-----------------|---------------------------------------|
| Identified uses | Chemical for analysis and production. |
|-----------------|---------------------------------------|

**1.3 Details of the supplier of the safety data sheet**

|                  |   |
|------------------|---|
| Company          | RCI LABSCAN LIMITED.<br>24 Rama 1 Road, Pathumwan, Bangkok 10330 Thailand |
| Telephone number | (662) 613-7911-4  |
| Fax number       | (662) 613-7915  |

**1.4 Emergency Telephone Number**

|                 |                  |
|-----------------|------------------|
| Emergency phone | (662) 613-7911-4 |
|-----------------|------------------|

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008**

Flammable liquids (Category 2), H225

Skin irritation (Category 2), H315

For the full text of the H-Statements mentioned in this Section, see Section 16.

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

|   |                  |     |
|---|------------------|-----|
| F | Highly flammable | R11 |
|---|------------------|-----|

|    |          |     |
|----|----------|-----|
| Xi | Irritant | R38 |
|----|----------|-----|

For the full text of the R-phrases mentioned in this Section, see Section 16.

**2.2 Label elements**

**Labelling according Regulation (EC) No 1272/2008**

Pictogram



Signal word

Danger

Hazard statement(s)

|      |                                     |
|------|-------------------------------------|
| H225 | Highly flammable liquid and vapour. |
|------|-------------------------------------|

|      |                         |
|------|-------------------------|
| H315 | Causes skin irritation. |
|------|-------------------------|

Precautionary statement(s)

|      |  |
|------|--|
| 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 hand thoroughly after handling.                               |

|                    |   |
|--------------------|---|
| P280               | Wear protective gloves/eye protection/face protection.  |
| P302 + P352        | IF ON SKIN: Wash with plenty of soap and water.   |
| P303 + P361 + P353 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.<br>Rinse skin with water/shower. |
| P332 + P313        | If skin irritation occurs: Get medical advice/attention.  |
| P362               | Take off contaminated clothing and wash before reuse.   |
| P370 + P378        | In case of fire: Use carbon dioxide, dry chemical or foam for extinction.                                     |
| P403 + P235        | Store in a well-ventilated place. Keep cool.  |

### 2.3 Other hazards

None

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Synonyms tert-Butyl methyl ether, 1, 1-Dimethylethyl methyl ether, 2-Methoxy-2-methylpropane, Methyl-1,1-dimethylethyl ether, tert-Butoxymethane, 2-Methyl-2-methoxypropane, MtBE, 2-Methyl butane-2-ol.

|           |           |              |   |                  |          |
|-----------|-----------|--------------|---|------------------|----------|
| CAS-No    | EC-No     | EC-Index-No  | Formula   | Molecular Weight | Weight % |
| 1634-04-4 | 216-653-1 | 603-181-00-X | (CH <sub>3</sub> ) <sub>3</sub> COCH <sub>3</sub> | 88.15 g/mol      | >99      |

#### Hazardous ingredients according to Regulation (EC) No 1272/2008

| Component   | Concentration | Classification   |
|---|---------------|--|
| <b>Methyl-t-butyl ether</b>                                     |               |  |
| CAS-No 1634-04-4<br>EC-No 216-653-1<br>EC-Index-No 603-181-00-X | >99%          | Flammable liquids (Category 2), H225<br>Skin irritation (Category 2), H315 |

#### Hazardous ingredients according to Directive 1999/45/EC

| Component   | Concentration | Classification                                |
|---|---------------|---|
| <b>Methyl-t-butyl ether</b>                                     |               |   |
| CAS-No 1634-04-4<br>EC-No 216-653-1<br>EC-Index-No 603-181-00-X | >99%          | F, Highly flammable, R11<br>Xi, Irritant, R38 |

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

|                |   |
|----------------|---|
| General advice | Show this safety data sheet to the doctor in attendance.  |
| Inhalation     | Move to fresh air in case of accidental inhalation of vapors. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus. |
| Skin contact   | Remove contaminated clothing and wash affected skin with soap and water. If signs of poisoning appear, treat as for inhalation. Obtain medical attention. Wash contaminated clothing before reuse. Contaminated combustible material, e.g. clothing ignites more readily and burns fiercely.                            |
| Eye contact    | If the substance has got into the eyes, immediately wash out with plenty of water at least 15 minutes. Obtain medical attention.  |
| Ingestion      | Rinse mouth. Do not induce vomiting. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical   |

supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus. Obtain medical attention. Never give anything by mouth to an unconscious person.

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

The most important known symptoms and effects are described in section 2.2 and section 11

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

After swallowing: caution if victim vomits. Risk of aspiration. Keep airways free.

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

##### Suitable extinguishing media

Extinguish with carbon dioxide, dry chemical or foam. In the event of fire, cool tanks with water spray.

#### 5.2 Special hazards arising from the substance or mixture

Vapors may form explosive mixture with air. Flash back possible over considerable distance.

#### 5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

#### 5.4 Further information

Standard procedure for chemical fires. Take measures to prevent electrostatic charging. Prevent firefighting water from entering surface water or groundwater.

### SECTION 6: Accidental release measures

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

Evacuate personnel to safe areas. Do not breathe vapors or spray mist. Wear a positive-pressure supplied-air respirator, flame retardant antistatic protective clothing. Shut off leaks if without risk. Keep people away from and upwind of spill/leak.

#### 6.2 Environmental precautions

Contain or absorb leaking liquid with sand or earth, consults an expert. Prevent liquid entering sewers, basements and workpits. If substance has entered a water course or sewer or contaminated soil, advise police.

#### 6.3 Methods and materials for containment and cleaning up

Spillage: May react with combustible substances creating fire or explosion hazard and formation of toxic fumes. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Soak up with inert absorbent material (e.g. sand, silica gel). Prevent liquid entering sewers, basements and workpits; vapor may create explosive atmosphere. Transfer to covered steel drums. Dispose of promptly.

#### 6.4 Reference to other sections

For disposal see **Section 13**.

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

Keep container tightly closed. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only in area provided with appropriate exhaust ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Do not empty into drains.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep tightly closed at room temperature in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep out of direct sunlight and away from incompatible materials. Store in original container. Electrical equipment should be protected to the appropriate standard.

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****8.2 Exposure controls****Appropriate engineering controls**

The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Ventilation hoods and fans required when working with organic solvents or in hot melt applications.

**Individual protection measures (Personal protective equipment, PPE)****Eye/face protection**

Goggles giving complete protection to eyes.

**Skin protection**

Chemical resistant apron / flame retardant antistatic protective clothing, heavy duty work shoes.

Handle with gloves

- Splash contact wears gloves from nitrile rubber material.

The select protective gloves have to satisfy the specifications of EU Directive 89/686 EEC and standard EN 374 derived from it.

**Respiratory protection**

In case of insufficient ventilation, wear suitable respiratory equipment. Required when vapor/aerosols are generated filter AX (EN 371).

**Environmental exposure controls**

Prevent liquid entering sewers, basements and workpits.

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties**

|   |                     |
|---|---------------------|
| Appearance: Form                        | Liquid              |
| : Color                                 | Colorless           |
| Odour                                   | Characteristic      |
| Odour Threshold                         | Not Available       |
| pH                                      | Not Available       |
| Melting point/range                     | -108.6 °C           |
| Boiling point/range                     | 55.3 °C at 1013 hPa |
| Flash point                             | -28 °C (closed cup) |
| Evaporation rate                        | Not Available       |
| Flammability (solid, gas)               | Not Available       |
| Explosion limits: lower                 | 1.5 % (V)           |
| upper                                   | 8.5 % (V)           |
| Vapor Pressure                          | 268 hPa at 20°C     |
| Relative Vapor Density                  | 2.60                |
| Density                                 | 0.740 g/ml at 20°C  |
| Water solubility                        | 42 g/l at 20°C      |
| Partition coefficient (n-octanol/water) | log Pow: 1.06       |

|                           |  |
|---------------------------|--|
| Auto-Ignition temperature | 460 °C   |
| Decomposition Temperature | Not Available  |
| Viscosity                 | 0.36 mPa.s at 20°C                                       |
| Explosive properties      | Not Explosive  |
| Oxidizing properties      | The substance or mixture is not classified as oxidizing. |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Highly inflammable. Light-sensitive. Explosible with air in a vaporous/gaseous state.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

The substance can react dangerously with oxidizing agent, strong acids, halogens, strong bases.

The substance forms an explosive mixture with air.

### 10.4 Conditions to avoid

Heat, flames and sparks.

### 10.5 Incompatible materials

Oxidizing agent, strong acids, halogens, strong bases.

Unsuitable working material is various plastics, rubber.

### 10.6 Hazardous decomposition products

Peroxide, Carbon monoxides, Carbon dioxides (Hazardous decomposition products from under fire condition).

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LC<sub>50</sub> (inhalation, rat): 85 mg/l /4h.

LD<sub>50</sub> (oral, rat): > 2000 mg/kg.

LD<sub>50</sub> (dermal, rabbit): 2000 mg/kg.

#### Acute oral toxicity

Absorption

Symptoms : nausea and vomiting. Aspiration may cause pulmonary oedema and pneumonitis.

#### Acute inhalation toxicity

Absorption

Symptoms: mucosal irritations, irritation symptoms in the respiratory tract. In high concentrations: unconsciousness..

#### Skin corrosion/irritation

Slight irritations. Danger of skin absorption. Drying out effect resulting in rough and chapped skin.

#### Serious eye damage/eye irritation

Not Available

#### Respiratory or skin sensitization

Sensitization test (Magnusson and Kligman): No sensitizing effect.

**Germ cell mutagenicity**

Bacterial mutagenicity: Salmonella typhimurium: negative.

Mutagenicity (mammal cell test): micronucleus negative.

**Carcinogenicity**

Not Available

**Reproductive toxicity**

Not Available

**Teratogenicity**

Not Available

**Specific target organ toxicity (STOT) - single exposure**

Not Available

**Specific target organ toxicity (STOT) - repeated exposure**

Not Available

**Aspiration hazard**

Not Available

**Further information**

After accidental swallowing the substance may pose a risk of aspiration. Passage into the lung (vomiting) can result in a condition resembling pneumonia (chemical pneumonitis).

After absorption of large quantities: drowsiness, dizziness, euphoria, excitation, spasms in certain circumstances narcosis.

The product should be handled with the care usual when dealing with chemicals.

**SECTION 12: Ecological information****12.1 Toxicity**

|  |  |
|--|--|
| Toxicity to fish                                       | LC <sub>50</sub> P.promelas : 672 mg/l /96h.               |
| Toxicity to daphnia<br>and other aquatic invertebrates | EC <sub>50</sub> Daphnia magna: 651 mg/l /48h.             |
| Toxicity to algae                                      | IC <sub>50</sub> Desmodesmus subspicatus : >800 mg/l /72h. |
| Toxicity to bacteria                                   | EC <sub>10</sub> Ps. Putida : 700 mg/l /18h.               |

**12.2 Persistence and degradability**

Biodegradability 2% /28 d, Not readily biodegradable.

**12.3 Bioaccumulative potential**

Partition coefficient (n-octanol/water) log Pow: 1.06 (experimental).  
No bioaccumulation is to be expected (log P o/w 1-3)

**12.4 Mobility in soil**

Not Available

**12.5 Other adverse effects**

Do not allow to enter waters, waste water or soil.

**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Product**

There are no uniform EC Regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through

corresponding law and regulations. We recommend that you contact either the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste or burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

#### Contaminated packaging

Disposal in compliance with official regulations. Handle contaminated packaging as hazardous waste in the same way of the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

## SECTION 14: Transport information

#### Land Transport (ADR/RID)

|                              |                         |
|------------------------------|-------------------------|
| UN Number                    | 2398                    |
| UN proper shipping name      | METHYL tert-BUTYL ETHER |
| Transport hazard class(es)   | 3                       |
| Packaging group              | II                      |
| Environmental hazards        | No                      |
| Special precautions for user | Yes                     |

#### Sea transport (IMDG)

|                              |                         |
|------------------------------|-------------------------|
| UN Number                    | 2398                    |
| UN proper shipping name      | METHYL tert-BUTYL ETHER |
| Transport hazard class(es)   | 3                       |
| Packaging group              | II                      |
| Marine pollutant             | No                      |
| Special precautions for user | Yes                     |
| EmS                          | F-E S-D                 |

#### Air transport (IATA)

|                              |                         |
|------------------------------|-------------------------|
| UN Number                    | 2398                    |
| UN proper shipping name      | METHYL tert-BUTYL ETHER |
| Transport hazard class(es)   | 3                       |
| Packaging group              | II                      |
| Environmental hazards        | No                      |
| Special precautions for user | No                      |

#### River transport (AND/ADNR)

(Not examined)

## SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

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

Not Available

#### 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

## SECTION 16: Other information

#### Full text of H-Statements referred to under sections 2 and 3

H225 Highly flammable liquid and vapour.

H315 Causes skin irritation.

**Full text of R-phrases referred to under sections 2 and 3**

|     |                     |
|-----|---------------------|
| F   | Highly flammable    |
| Xi  | Irritant            |
| R11 | Highly flammable.   |
| R38 | Irritating to skin. |

**Recommended restrictions**

Take notice of labels and safety data sheets for the working. Chemicals Take necessary action to avoid static electricity discharge.

**Reference**

Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Labelling according to EC Directives 67/548 EEC and Regulation (EC) No 1272/2008.

Transportation information according to Recommendations on the Transport of Dangerous Goods, Model Regulations. Twelfth revised edition. United Nations.

Institute for Occupational Safety and Health of the German Social Accident Insurance in Sankt Augustin/Germany,

Source: IFA for Databases on hazardous substances (GESTIS).

**Further information**

Contact to RCI Labscan Limited.

**Revision Date**

01/04/2015

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