SECTION 1: Identification

1.1. Identification

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade name</td>
<td>Methyl tert-Butyl Ether</td>
</tr>
<tr>
<td>CAS No</td>
<td>1634-04-4</td>
</tr>
<tr>
<td>Product code</td>
<td>HP-040900-FP</td>
</tr>
<tr>
<td>Formula</td>
<td>C5H12O</td>
</tr>
<tr>
<td>Synonyms</td>
<td>tert-Butyl methyl ether / Ether, methyl tert-butyl / Ether, tert-butyl methyl / 2-Methoxy-2-methylpropane / Propane, 2-methoxy-2-methyl- / Methyl tertiary-butyl ether / MTBE / tertiary-Butyl methyl ether / 2-Methyl-2-methoxypropane / Methyl tert-butylether / Tert-butyl-methyl ether / Methyl tertiary butyl ether</td>
</tr>
</tbody>
</table>

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

Use of the substance/mixture: Octane booster for gasolines; manufacture of isobutene; extraction solvent, etc.

1.3. Details of the supplier of the safety data sheet

Monument Chemical
16717 Jacintoport Blvd.
Houston, TX 77015 - USA
T (281) 452-5951 - F (281) 457-1127
sds@monumentchemical.com - www.monumentchemical.com

1.4. Emergency telephone number

Emergency number: 24 HR CHEMTREC: 1-800-424-9300; 24 HR Emergency Assistance: 1-832-376-2026

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

<table>
<thead>
<tr>
<th>GHS-US classification</th>
<th>Full text of H-phrases: see section 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Liq. 2</td>
<td>H225 - Highly flammable liquid and vapour</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>H315 - Causes skin irritation</td>
</tr>
</tbody>
</table>

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US): GHS02, GHS07

Signal word (GHS-US): Danger

Hazard statements (GHS-US): H225 - Highly flammable liquid and vapor
H315 - Causes skin irritation

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
P243 - Take precautionary measures against static discharge
P264 - Wash hands thoroughly after handling
P280 - Wear eye protection, protective clothing, protective gloves
P302+P352 - If on skin: Wash with plenty of water
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P321 - Specific treatment (see a doctor on this label)
P332+P337 - If skin irritation occurs: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P370+P378 - In case of fire: Use alcohol resistant foam, carbon dioxide (CO2), dry extinguishing powder, Water spray to extinguish
P403+P405 - Store in a well-ventilated place. Keep cool
P501 - Dispose of contents/container to hazardous or special waste collection point, in
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>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl tert-Butyl Ether (Main constituent)</td>
<td>(CAS No) 1634-04-4</td>
<td>100</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Irrit. 2, H315</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 general: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation: Allow victim to breathe fresh air. Allow the victim to rest.

First-aid measures after skin contact: Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Wash with plenty of soap and water. Get medical advice/attention. Get medical advice/attention. Specific treatment (see Consult a doctor/medical service on this label).

First-aid measures after eye contact: Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.

First-aid measures after ingestion: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

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

Symptoms/injuries after skin contact: Causes skin irritation.

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: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard: Highly flammable liquid and vapor.

Explosion hazard: May form flammable/explosive vapor-air mixture.

5.3. Advice for firefighters

Firefighting instructions: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

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 open flames. No smoking.

6.1.1. For non-emergency personnel

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection.

Emergency procedures: Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.
6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

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

Additional hazards when processed: Handle empty containers with care because residual vapors are flammable.

Precautions for safe handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No open flames. No smoking. Use only non-sparking tools.

Hygiene measures: Wash hands 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, lighting, Ventilation equipment.

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

Incompatible products: Strong bases. Strong acids.

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Methyl tert-Butyl Ether (1634-04-4)</th>
<th>ACGIH</th>
<th>ACGIH TWA (ppm)</th>
<th>50 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td></td>
<td>Remark (ACGIH)</td>
<td>URT irr; kidney dam</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Personal protective equipment: Avoid all unnecessary exposure.

Hand protection: Wear protective gloves.

Eye protection: Chemical goggles or safety glasses.

Skin and body protection: Wear suitable protective clothing.

Respiratory protection: Wear appropriate mask.

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: Clear, colorless liquid.

Color: Colorless clear

Odor: Characteristic ether-like

Odor threshold: No data available

pH: No data available

Melting point: -108.6 °C; -163.5 °F

Freezing point: No data available

Boiling point: 55.2 °C; 131.0 °F

Flash point: -33 °C; -27.4 °F (closed cup)

Relative evaporation rate (butyl acetate=1): No data available

Flammability (solid, gas): No data available

Explosion limits: 1.5 - 8.5 vol %

Explosive properties: No data available

Oxidizing properties: No data available
Vapor pressure: 268 hPa (at 20 °C)
Relative density: 0.74
Relative vapor density at 20 °C: 3
Specific gravity / density: 0.74 g/cm³ (at 20 °C)
Molecular mass: 88.2 g/mol
Solubility: Water: 50 g/l (at 25 °C)
Log Pow: 1.06 (at 23 °C)
Auto-ignition temperature: 375 °C ; 705.2 °F
Decomposition temperature: No data available
Viscosity: No data available
9.2. Other information
No additional information available

SECTION 10: Stability and reactivity
10.1. Reactivity
No additional information available
10.2. Chemical stability
Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.
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
Strong acids. Strong bases.
10.6. Hazardous decomposition products

SECTION 11: Toxicological information
11.1. Information on toxicological effects
Acute toxicity: Not classified

| Methyl tert-Butyl Ether (1634-04-4) |
|-------------------------------|-----------------|
| LD50 oral rat                  | 2963 mg/kg      |
| LD50 dermal rabbit             | 10000 mg/kg     |
| LC50 inhalation rat (mg/l)     | 85 mg/l/4h      |
| LC50 inhalation rat (ppm)      | 23576 ppm/4h    |
| ATE US (oral)                  | 2963.000 mg/kg body weight |
| ATE US (dermal)                | 10000.000 mg/kg body weight |
| ATE US (gases)                 | 23576.000 ppmV/4h |
| ATE US (vapors)                | 85.000 mg/l/4h  |
| ATE US (dust, mist)            | 85.000 mg/l/4h  |

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

| Methyl tert-Butyl Ether (1634-04-4) |
|-------------------------------|-----------------|
| IARC group                    | 3 - Not classifiable |
Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): Not classified
### Specific target organ toxicity (repeated exposure)
Not classified

### Aspiration hazard
Not classified

### Potential adverse human health effects and symptoms
Based on available data, the classification criteria are not met.

### Symptoms/injuries after skin contact
Causes skin irritation.

### SECTION 12: Ecological information

#### 12.1. Toxicity

<table>
<thead>
<tr>
<th>Methyl tert-Butyl Ether (1634-04-4)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>672 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>542 mg/l (Exposure time: 48 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>929 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Methyl tert-Butyl Ether (1634-04-4)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Not established.</td>
</tr>
</tbody>
</table>

#### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Methyl tert-Butyl Ether (1634-04-4)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BCF fish 1</td>
<td>(no bioaccumulation expected)</td>
</tr>
<tr>
<td>Log Pow</td>
<td>1.06 (at 23 °C)</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>Not established.</td>
</tr>
</tbody>
</table>

#### 12.4. Mobility in soil
No additional information available

#### 12.5. Other adverse effects
Other information : Avoid release to the environment.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

- Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
- Additional information : Handle empty containers with care because residual vapors are flammable.
- Ecology - waste materials : Avoid release to the environment.

### SECTION 14: Transport information

#### Department of Transportation (DOT)

- In accordance with DOT
- Transport document description : UN2398 Methyl tert-butyl ether, 3, II
- UN-No.(DOT) : UN2398
- Proper Shipping Name (DOT) : Methyl tert-butyl ether
- Transport hazard class(es) (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
- Hazard labels (DOT) : 3 - Flammable liquid

- Packing group (DOT) : II - Medium Danger
- DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
- DOT Packaging Bulk (49 CFR 173.xxx) : 242
## 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.
- 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.

## DOT Packaging Exceptions (49 CFR 173.xxx)
- 150

## DOT Quantity Limitations
- Passenger aircraft/rail (49 CFR 173.27): 5 L
- Cargo aircraft only (49 CFR 175.75): 60 L

## DOT Vessel Stowage Location
- E - 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, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.

## Emergency Response Guide (ERG) Number
- 127

## Other information
- No supplementary information available.

## TDG
- No additional information available

### Transport by sea
- UN-No. (IMDG): 2398
- Proper Shipping Name (IMDG): METHYL tert-BUTYL ETHER
- Class (IMDG): 3 - Flammable liquids
- Packing group (IMDG): II - substances presenting medium danger

### Air transport
- UN-No. (IATA): 2398
- Proper Shipping Name (IATA): Methyl tert-butyl ether
- Class (IATA): 3 - Flammable Liquids
- Packing group (IATA): II - Medium Danger

## SECTION 15: Regulatory information

### 15.1. US Federal regulations
- **Methyl tert-Butyl Ether (1634-04-4)**
  - Listed on the United States TSCA (Toxic Substances Control Act) inventory
  - Subject to reporting requirements of United States SARA Section 313
  - RQ (Reportable quantity, section 304 of EPA’s List of Lists): 1000 lb
  - SARA Section 313 - Emission Reporting: 1.0%

### 15.2. International regulations

#### CANADA
- **Methyl tert-Butyl Ether (1634-04-4)**
  - Listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations
- No additional information available

### National regulations
- **Methyl tert-Butyl Ether (1634-04-4)**
  - Listed on the AICS (Australian Inventory of Chemical Substances)
  - Listed on IECS (Inventory of Existing Chemical Substances Produced or Imported in China)
  - Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
  - Listed on the Japanese ISHL (Industrial Safety and Health Law)
  - Listed on the Korean ECL (Existing Chemicals List)
  - Listed on NZIoC (New Zealand Inventory of Chemicals)
  - Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
  - Listed on INSQ (Mexican national Inventory of Chemical Substances)
  - Listed on Turkish inventory of chemical
**Methyl tert-Butyl Ether**

Safety Data Sheet

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

### 15.3. US State regulations

**Methyl tert-Butyl Ether (1634-04-4)**

<table>
<thead>
<tr>
<th>State or local regulations</th>
<th>U.S. - Massachusetts - Right To Know List</th>
</tr>
</thead>
<tbody>
<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) - Environmental Hazard 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**: 06/01/2015

**Other information**: None.

**Full text of H-phrases:**

<table>
<thead>
<tr>
<th>Flam. Liq. 2</th>
<th>Flammable liquids Category 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation Category 2</td>
</tr>
<tr>
<td>H225</td>
<td>Highly flammable liquid and vapor</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
</tbody>
</table>

**SDS US (GHS HazCom 2012)**

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