Methyl ethyl ketone (MEK)

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>Trade name</th>
<th>Methyl ethyl ketone (MEK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>2-Butanone, 3-Butanone, methyl acetone, Ethyl methyl ketone</td>
</tr>
<tr>
<td>Use</td>
<td>Catalyst production, Industrial &amp; Institutional cleaning, Industrial use, Intermediate, Paint and Coatings, Pharmaceutical, Process/Extraction Solvent, Process material, Raw material for chemical processes, Raw material for industry, Raw material for pharmaceuticals, Solvent</td>
</tr>
<tr>
<td>Company</td>
<td>Sasol Chemicals (USA) LLC</td>
</tr>
<tr>
<td>Address</td>
<td>12120 Wickchester Lane, Houston, TX 77079</td>
</tr>
<tr>
<td>Telephone</td>
<td>CHEMTREC North America Transportation Emergency (24-hr) (800) 424 9300</td>
</tr>
<tr>
<td></td>
<td>CHEMTREC World Wide (703) 527-3887</td>
</tr>
<tr>
<td></td>
<td>Other Emergencies (24-hr) (337) 494 5142</td>
</tr>
<tr>
<td></td>
<td>SDS and Product Information (8:00am-4:30pm CST) (281) 588 3491</td>
</tr>
<tr>
<td></td>
<td>Health and Safety Information (7:30am-4:00pm CST) (281) 588 3492</td>
</tr>
<tr>
<td>E-mail address</td>
<td><a href="mailto:SasolElectronicSDS@us.sasol.com">SasolElectronicSDS@us.sasol.com</a></td>
</tr>
</tbody>
</table>

SECTION 2 HAZARDS IDENTIFICATION

| OSHA/GHS Hazards   | Flammable liquids Category 2 |
|                   | Eye irritation Category 2A  |
|                   | Specific target organ toxicity - single exposure Category 3 (Narcotic effects) |

LABEL ELEMENTS

Hazard symbols

Signal word Danger

Hazard statements

H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

Precautionary statements

Prevention P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Methyl ethyl ketone (MEK)

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.
P280   Wear protective gloves/ eye protection/ face protection.
P264   Wash skin thoroughly after handling.
P261   Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P271   Use only outdoors or in a well-ventilated area.

Response
P303 + P361 + P353   IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P370 + P378   In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide for extinction.
P305 + P351 + P338   IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313   If eye irritation persists: Get medical advice/ attention.
P304 + P340   IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312   Call a POISON CENTER/doctor if you feel unwell.

Storage
P403 + P405 + P235   Store locked up in a well-ventilated place. Keep cool.

SECTION 3   COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl ethyl ketone</td>
<td>78-93-3</td>
<td>99.5</td>
</tr>
</tbody>
</table>

See Section 8 for Exposure Guidelines and Section 15 for Regulatory Classifications.

SECTION 4   FIRST AID MEASURES

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

Skin contact  Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. When symptoms persist or in all cases of doubt seek medical advice. Wash contaminated clothing before re-use.

Inhalation  Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. In case of shortness of breath, give oxygen. Call a physician immediately.

Ingestion   If swallowed, call a poison control centre or doctor immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.
Methyl ethyl ketone (MEK)

SECTION 5   FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES

Fire/explosion  Vapours may form explosive mixture with air. Flash back possible over considerable distance. Use water spray to disperse the vapors.  NFPA Class 1B flammable liquid.

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

Protective equipment and precautions for firefighters  In the event of fire, wear self-contained breathing apparatus.

Further information  Keep containers and surroundings cool with water spray. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

SECTION 6   ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and cleaning up  Evacuate personnel to safe areas. Remove all sources of ignition. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Do not flush into surface water or sanitary sewer system.

SECTION 7   HANDLING AND STORAGE

Safe handling advice  Ensure all equipment is electrically grounded before beginning transfer operations. Keep away from heat and sources of ignition.

Storage/Transport pressure  Ambient

Load/Unload temperature  Ambient

SECTION 8   EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING MEASURES  Air contaminant levels should be controlled below the PEL or TLV for this product (see Exposure Guidelines). Ensure adequate ventilation, especially in confined areas. Use explosion-proof equipment.

PERSONAL PROTECTIVE EQUIPMENT

Eyes  Chemical resistant goggles must be worn. Face-shield.
Methyl ethyl ketone (MEK)

**Skin**
Wear suitable protective clothing, gloves and eye/face protection.

**Inhalation**
Respiratory protection is normally not required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Use NIOSH approved respiratory protection.

**EXPOSURE GUIDELINES**

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure limit(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl ethyl ketone</td>
<td>ACGIH TLV (8-hour) 200 ppm 590 mg/m³</td>
</tr>
<tr>
<td></td>
<td>ACGIH STEL (Short Term Exposure Limit) 300 ppm 885 mg/m³</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (Permissible Exposure Limit) 200 ppm 590 mg/m³</td>
</tr>
</tbody>
</table>

**PEL** = Permissible Exposure Limits

**TLV** = Threshold Limit Value

**EL** = Excursion Limit

**STEL** = Short Term Exposure Limit (15 min.)

**WEEL** = Workplace Environmental Exposure Level

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**
liquid

**Colour**
clear colourless

**Form**
liquid

**Odour**
characteristic

**Odour Threshold**
No data available

**Flash point**
-6 °C, 21 °F;

**Flammability**
Upper explosion limit: 11.5 % (V)
Lower explosion limit: 1.5 % (V)

**Boiling point/boiling range**
79.6 °C, 175.6 °F;

**Melting point/range**
-86 °C, -123 °F;

**Auto-ignition temperature**
404 °C, 759 °F;

**Decomposition temperature**
No data available

**Flammability (solid, gas)**
No data available

**Vapour pressure**
126 hPa @ 25 °C, 77 °F;
Methyl ethyl ketone (MEK)

Vapour density 1.15
Density 0.805 g/cm³ @ 20 °C, 68 °F;
Relative density No data available
Water solubility partly miscible
Viscosity No data available
Viscosity, dynamic 0.40 mPa.s @ 20 °C, 68 °F; DIN 53015;
pH No data available
Evaporation rate No data available
Partition coefficient: n-octanol/water log Pow: 0.3; @ 40 °C, 104 °F;
Volatile organic compounds (VOC) content 100 %

SECTION 10  STABILITY AND REACTIVITY

Reactivity Vapours may form explosive mixture with air.
Chemical stability No decomposition if stored and applied as directed.
Conditions to avoid Extremes of temperature and direct sunlight.
Hazardous decomposition products None known
Materials to avoid Oxidizing agents.
Hazardous polymerisation May form explosive peroxides.

SECTION 11  TOXICOLOGICAL INFORMATION

Acute dermal toxicity LD50 Rabbit: > 2,000 mg/kg (literature value)
Acute inhalation toxicity No data available
Methyl ethyl ketone (MEK)

**Acute oral toxicity**  
LD50 Rat: > 2,000 mg/kg  
(literature value)

**Skin corrosion/irritation**  
(Rabbit)  
slight irritation  
(literature value)

**Serious eye damage/eye irritation**  
(Rabbit)  
irritating  
(literature value)

**Respiratory or skin sensitisation**  
Guinea pig: not sensitizing; Maximisation Test  
(literature value)

**Germ cell mutagenicity**  
Genotoxicity in vitro:  
Type: Ames test  
System: Salmonella typhimurium; with and without metabolic activation  
Result: In vitro tests did not show mutagenic effects  
(literature value)

**Genotoxicity in vivo:**  
No data available

**Assessment Mutagenicity:**  
Based on available data, the classification criteria are not met.

**Reproductive toxicity**  
Reproductive toxicity:  
No data available

**Assessment Reproductive toxicity:**  
No data available

**Teratogenicity:**  
No data available

**Assessment teratogenicity:**  
No data available

**STOT - single exposure**  
The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

**STOT - repeated exposure**  
No data available

**Aspiration toxicity**  
No data available

**Carcinogenicity**  
Assessment carcinogenicity:  
Contains no ingredient listed as a carcinogen
SAFETY DATA SHEET

Methyl ethyl ketone (MEK)

SECTION 12 ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
<td>LC50 (Pimephales promelas (fathead minnow)) 96 hours: &gt; 100 mg/l; static test (literature value)</td>
</tr>
<tr>
<td>Toxicity to aquatic invertebrates</td>
<td>EC50 (Daphnia magna (Water flea)) 48 hours: &gt; 100 mg/l; static test (literature value)</td>
</tr>
<tr>
<td>Toxicity to algae</td>
<td>EC50 (Pseudokirchneriella subcapitata (green algae)) 96 hours: &gt; 100 mg/l; static test (literature value)</td>
</tr>
<tr>
<td>Biodegradation</td>
<td>Readily biodegradable. OECD Test Guideline 301D (28 d): &gt; 60 % aerobic (literature value)</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>No bioaccumulation is to be expected (log Pow &lt;= 4).</td>
</tr>
<tr>
<td>Mobility in soil</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Other adverse effects

This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

SECTION 13 DISPOSAL CONSIDERATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Code</td>
<td>U159.D001 - Ignitability (RQ 100 LB). Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures, contamination, and spillage may change the classification.</td>
</tr>
<tr>
<td>Disposal methods</td>
<td>Dispose of only in accordance with local, state, and federal regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.</td>
</tr>
<tr>
<td>Empty containers</td>
<td>Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, triple-rinsed, properly bunged and promptly returned to a drum reconditioner, or properly disposed.</td>
</tr>
</tbody>
</table>

SECTION 14 TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
<td>UN 1193, Methyl Ethyl Ketone, 3, II When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.</td>
</tr>
</tbody>
</table>
Methyl ethyl ketone (MEK)

IATA UN 1193, Methyl Ethyl Ketone, 3, II
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.

IMDG UN 1193, Methyl Ethyl Ketone, 3, II
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remarks No data available

SECTION 15 REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA Inventory Listing

Components | CAS-No.
--- | ---
2-Butanone | 78-93-3

SARA 302 Status

Components | CAS-No. | Weight percent
--- | --- | ---
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 311/312 Classification
Should this product meet EPCRA 311/312 Tier reporting criteria of 40 CFR 370, refer to Section 2 of this SDS for appropriate classification and Section 3 for components that meet the hazardous classification.

SARA 313 Chemical

Components | CAS-No. | Weight percent
--- | --- | ---
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US. EPA CERCLA Hazardous Substances (40 CFR 302)

Components | Reportable Quantity | Weight percent
--- | --- | ---
2-Butanone | 5,000 LB | 99.5 %

INTERNATIONAL REGULATIONS

WHMIS Classification

Flammable liquids Category 2
Eye irritation Category 2A
Specific target organ toxicity - single exposure Category 3 (Narcotic effects)
European Union
Classification according to Regulation (EU) 1272/2008.
- Flammable liquids, Category 2
- Eye irritation, Category 2
- Specific target organ toxicity - single exposure, Category 3 (Narcotic effects)

Australia. Inventory of Chemical Substances (AICS) Listed
Japan. Inventory of Existing and New Chemical Substances (ENCS) Listed
Japan. ISHL - Inventory of Chemical Substances Listed
Canada. Domestic Substances List (DSL) Inventory Listed
Canada. Non-Domestic Substance Listing (NDSL) Not listed
Philippines. Inventory of Chemicals / Chemical Substances (PICCS) Listed
Korea. Existing Chemicals Inventory (KECI) Listed
China. Inventory of Existing Chemical Substances (IECSC) Listed
Mexico. National Inventory of Chemical Substances (INSQ) Listed
New Zealand. Inventory of Chemical Substances (NZIoC) Listed
Switzerland. Inventory of Notified New Substances (CHINV) Listed
Taiwan. National Existing Chemical Inventory (NECI) Listed

Please note: The names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in Section 3.

STATE REGULATIONS

California Prop. 65
Components
none

SECTION 16 OTHER INFORMATION

HAZARD RATINGS

<table>
<thead>
<tr>
<th>HMIS®</th>
<th>Health</th>
<th>Flammability</th>
<th>Physical Hazard/Instability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>NFPA</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

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