MATERIAL SAFETY DATA SHEET
METHYL ISOBUTYL KETONE

1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: Methyl isobutyl ketone
Synonyms: Isobutyl methyl ketone; Isopropylacetone; MIBK; 4-Methyl-2-pentanone
Company Identification: Sisco Research Laboratories Pvt. Ltd.
Andheri (East), Mumbai – 400 099.
Tel: +91 22 2687 2601
Fax: +91 22 2687 8241
Website: www.srlchem.com

2 - COMPOSITION, INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-10-1</td>
<td>Methyl isobutyl ketone</td>
<td>98%</td>
<td>203-550-1</td>
</tr>
</tbody>
</table>

3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Highly flammable. Irritating to eyes and respiratory system. Harmful by inhalation.
Repeated exposure may cause skin dryness or cracking.

Potential Health Effects
Eye: Causes eye irritation.
Skin: Causes skin irritation. Repeated or prolonged exposure may cause drying and cracking of the skin.
Ingestion: Harmful if swallowed. May cause irritation of the digestive tract.
Inhalation: Harmful if inhaled. Causes respiratory tract irritation.
Chronic:

4 - FIRST AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Get medical aid. Wash mouth out with water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.
5 - FIRE FIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. May form explosive peroxides.

Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use water spray, dry chemical, carbon dioxide, or chemical foam.

6 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Vacuum or sweep up material and place into a suitable disposal container. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Scoop up with a nonsparking tool, then place into a suitable container for disposal. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Do not let this chemical enter the environment.

7 – HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

Storage: Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. May form explosive peroxides on prolonged storage.

8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits CAS# 108-10-1:
United Kingdom, WEL - TWA: 50 ppm TWA; 208 mg/m³ TWA
United Kingdom, WEL - STEL: 100 ppm STEL; 416 mg/m³ STEL
United States OSHA: 100 ppm TWA; 410 mg/m³ TWA
Belgium - TWA: 20 ppm VLE; 83 mg/m³ VLE
Belgium - STEL: 50 ppm VLE; 208 mg/m³ VLE
France - VME: 20 ppm VME; 83 mg/m³ VME
France - VLE: 50 ppm VLE; 208 mg/m³ VLE
Germany: 20 ppm TWA; 83 mg/m³ TWA
Germany: skin notation
Japan: 50 ppm OEL; 200 mg/m³ OEL
Malaysia: 50 ppm TWA; 205 mg/m³ TWA
Netherlands: 50 ppm STEL; 208 mg/m³ STEL
Netherlands: 25 ppm MAC; 104 mg/m³ MAC
Spain: 20 ppm VLA-ED; 83 mg/m³ VLA-ED
Spain: 50 ppm VLA-EC; 208 mg/m³ VLA-EC

Personal Protective Equipment

Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity/Density:</td>
<td>0.799-0.802 g</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>114-117 deg C</td>
</tr>
<tr>
<td>Molecular Formula:</td>
<td>C₆H₁₂O</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>100.16</td>
</tr>
</tbody>
</table>

10 - STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Incompatible materials, ignition sources, exposure to air, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong oxidizing agents, reducing agents, strong bases, potassium tert-butoxide.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

11 - TOXICOLOGICAL INFORMATION

RTECS#: CAS# 108-10-1: SA9275000
LD50/LC50:

CAS# 108-10-1: Draize test, rabbit, eye: 40 mg Severe;
Draize test, rabbit, eye: 100 uL/24H Moderate;
Draize test, rabbit, skin: 500 mg/24H Mild;
Inhalation, mouse: LC50 = 23300 mg/m3;
Inhalation, mouse: LC50 = 23300 mg/m3;
Inhalation, rat: LC50 = 100 gm/m3;
Oral, mouse: LD50 = 1900 mg/kg;
Oral, mouse: LD50 = 2850 mg/kg;
Oral, rat: LD50 = 2080 mg/kg;
Oral, rat: LD50 = 4600 mg/kg

Carcinogenicity: 4-Methyl-2-pentanone - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other: See actual entry in RTECS for complete information.

12 - ECOLOGICAL INFORMATION

Other: Do not empty into drains.

13 - DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

14 - TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>IATA</th>
<th>IMO</th>
<th>RID/ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Name:</td>
<td>Methyl Isobutyl Ketone</td>
<td>Methyl Isobutyl Ketone</td>
</tr>
<tr>
<td>Hazard Class:</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>UN Number:</td>
<td>1245</td>
<td>1245</td>
</tr>
<tr>
<td>Packing Group:</td>
<td>II</td>
<td>II</td>
</tr>
</tbody>
</table>

15 - REGULATORY INFORMATION

European/International Regulations
European Labeling in Accordance with EC Directives

Hazard Symbols: XN F
Risk Phrases: R 11 Highly flammable. R 20 Harmful by inhalation. R 36/37 Irritating to eyes and respiratory system. R 66 Repeated exposure may cause skin dryness or cracking.
Safety Phrases: S 9 Keep container in a well-ventilated place. S 16 Keep away from sources of ignition - No smoking. S 29 Do not empty into drains.

WGK (Water Danger/Protection) CAS# 108-10-1: 1
Canada CAS# 108-10-1 is listed on Canada's DSL List
US Federal
TSCA       CAS# 108-10-1 is listed on the TSCA Inventory.

16 - ADDITIONAL INFORMATION

SISCO RESEARCH LABORATORIES provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.