Material Safety Data Sheet
Methyl Isobutyl Ketone
Version 1.08  Revision Date 16.07.2007

1. Identification of the substance/preparation and of the company/undertaking

Trade name  Methyl Isobutyl Ketone

Synonyms  Methyl Isobutyl Ketone, 2-methylpropyl methyl ketone, 2-pentanone, Hexone, Isobutyl methyl ketone, 2-methyl-4-pentanone

Product code  2111

Use  Solvents

Company  Sasol Solvents
A division of Sasol Chemical Industries
Sturdee Avenue 2
ZA 2196  Rosebank

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                      Middle East, Arabic African countries  +961 3 487 287
                      Asia Pacific  +65 633 44 177
                      China  +86 10 5100 3039
                      South Africa  +27 (0)17 610 4444

2. Composition/information on ingredients

4-methylpentan-2-one; isobutyl methyl ketone

Contents: 99.50 %W/W

CAS-No.  108-10-1  Index-No.  606-004-00-4  EC-No.  203-550-1
Symbol(s)  F, Xn  R-phrase(s)  -R11 -R20 -R36/37 -R66

For the full text of the R phrases mentioned in this Section, see Section 16.
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3. Hazards identification

Identification of the risks
R11  Highly flammable.
R20  Harmful by inhalation.
R36/37  Irritating to eyes and respiratory system.
R66  Repeated exposure may cause skin dryness or cracking.

4. First aid measures

General advice
Consult a physician if necessary.

Inhalation
Move to fresh air in case of accidental inhalation of vapours. If breathing is irregular or stopped, administer artificial respiration. Monitor breathing, seek medical advice immediately.

Skin contact
Wash off immediately with plenty of water for at least 15 minutes. When symptoms persist or in all cases of doubt seek medical advice.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Call a physician immediately.

Ingestion
Do not induce vomiting without medical advice. Seek medical advice.

5. Fire-fighting measures

Suitable extinguishing media
Water spray, Dry powder, Alcohol-resistant foam

Special protective equipment for fire-fighters
Wear self-contained breathing apparatus and protective suit.

Further information
Cool containers / tanks with water spray.

6. Accidental release measures

Personal precautions
Keep people away from and upwind of spill/leak. Remove all sources of ignition. Do not breathe vapours or spray mist.

Environmental precautions
Prevent product from entering drains. Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste.
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Additional advice
Never return spills in original containers for re-use.

7. Handling and storage

Handling
Safe handling advice Avoid inhalation of vapour or mist. Wear personal protective equipment.
Advice on protection against fire and explosion Keep away from heat and sources of ignition. Use only explosion-proof equipment.

Storage
Requirements for storage areas and containers Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Components with workplace control parameters
NATIONAL OCCUPATIONAL EXPOSURE LIMITS
no data available
EUROPEAN OCCUPATIONAL EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-METHYLPENTAN-2-ONE</td>
<td>TWA</td>
<td>83 mg/m³ 20 ppm</td>
<td>05 2003</td>
<td>EU Exposure Limit Values</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>208 mg/m³ 50 ppm</td>
<td>05 2003</td>
<td>EU Exposure Limit Values</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td></td>
<td>05 2003</td>
<td>EU Exposure Limit Values</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td></td>
<td>05 2003</td>
<td>EU Exposure Limit Values</td>
</tr>
</tbody>
</table>

Engineering measures
Provide sufficient air exchange and/or exhaust in work rooms.

Personal protective equipment
Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.
Hand protection Gloves suitable for permanent contact:
Material: butyl-rubber
Break through time: 4 h
Material thickness: 0.5 mm
unsuitable gloves
Material: Polyvinylchloride, leather, nitrile rubber/nitrile latex,
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Eye protection  Safety glasses with side-shields
Skin and body protection  Protective suit, Safety shoes
Hygiene measures  Wash hands before breaks and immediately after handling the product.
Protective measures  Wear suitable protective equipment.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>pleasant</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-84 °C</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>115.9 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>14 °C; closed cup</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>448 °C</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>1.4 %(V)</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>7.5 %(V)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>15.7 hPa; 20 °C</td>
</tr>
<tr>
<td>Density</td>
<td>0.80 g/cm3; 20 °C</td>
</tr>
<tr>
<td>Water solubility</td>
<td>immiscible</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>log Pow: 1.2</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>0.575 mPa.s; 20 °C</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>3.45</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

Materials to avoid  Oxidizing agents, Reducing agents
Hazardous decomposition products  Carbon oxides

11. Toxicological information

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 rat:  2,080 mg/kg; literature value</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 rat:  100 g/m3; ; literature value</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD50 rabbit:  1,600 mg/kg; literature value</td>
</tr>
</tbody>
</table>
12. Ecological information

Ecotoxicity effects

Toxicity to fish

LC50 Pimephales promelas: 505 - 540 mg/l; 96 h; literature value
LC50 Salmo gairdneri: 600 mg/l; 96 h; literature value

Toxicity to daphnia and other aquatic invertebrates.

LC50 Daphnia magna: 4,300 mg/l; 24 h; literature value
EC100 Daphnia magna: 5,000 mg/l; 24 h; literature value

Toxicity to algae

EC50 Selenastrum capricornutum: 400 mg/l; 96 h; literature value
EC50 Scenedesmus subspicatus: 980 mg/l; 48 h; literature value

13. Disposal considerations

Product
Dispose of in accordance with local regulations.

Contaminated packaging
Store containers and offer for recycling of material when in accordance with the local regulations.

14. Transport information

ADR
UN-Number: 1245; Class: 3; Packaging group: II; F1;
Description of the goods: METHYL ISOBUTYL KETONE

RID
UN-Number: 1245; Class: 3; Packaging group: II; F1;
Description of the goods: METHYL ISOBUTYL KETONE

ADNR
UN-Number: 1245; Class: 3; Packaging group: II; F1;
Description of the goods: METHYL ISOBUTYL KETONE

IMDG
UN-Number: 1245; Class: 3; EmS: F-E, S-D; Packaging group: II; Description of the goods: METHYL ISOBUTYL KETONE
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ICAO/IATA
UN-Number: 1245; Class: 3; Packaging group: II; Description of the goods: Methyl isobutyl ketone

15. Regulatory information

Labelling

Regulatory base 67/548/EEC
Symbol(s) F: Highly flammable
Xn: Harmful

R-phrase(s) R11: Highly flammable.
R20: Harmful by inhalation.
R36/37: Irritating to eyes and respiratory system.
R66: Repeated exposure may cause skin dryness or cracking.

S-phrase(s) S 2: Keep out of the reach of children.
S 9: Keep container in a well-ventilated place.
S16: Keep away from sources of ignition - No smoking.
S29: Do not empty into drains.

Hazardous components which must be listed on the label 4-methylpentan-2-one; isobutyl methyl ketone

16. Other information

Full text of R-phrases referred to under sections 2 and 3
R11 Highly flammable.
R20 Harmful by inhalation.
R36/37 Irritating to eyes and respiratory system.
R66 Repeated exposure may cause skin dryness or cracking.
All reasonable efforts were exercised to compile this MSDS in accordance with ISO 11014 and ANSIZ400.1.1993. The MSDS provides information regarding the health, safety and environmental hazards, at the date of issue, to facilitate the safe receipt, use and handling of the product in the workplace. Since Sasol and its subsidiaries cannot anticipate or control all conditions under which the product may be handled, used and received in the workplace, it remains the obligation of each user, receiver or handler to, prior to usage, review this MSDS in the context within which the product will be received, handled or used in the workplace. The user, handler or receiver must ensure that the necessary mitigating measures are in place as regards health and safety. This does not substitute the need or requirement for any relevant risk assessments to be conducted. It further remains the responsibility of the receiver, handler or user to communicate such information to all relevant parties that may be involved in the receipt, use or handling of the product.

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The MSDS was approved by: Aggie Kotze