Shell Chemicals

**Data Sheet**

**Issued:**

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**Product Name**

# Methyl ethyl ketone

**Product Code** **S2113** **North America**

**Product Category** **Ketones**

**CAS Registry Number** 78-93-3

**Description**

Methyl Ethyl Ketone (MEK) is a colorless, low viscosity liquid with a mild odor similar to that of acetone. It is completely miscible with many organic liquids, but miscible with water to only a limited extent. With natural and synthetic resins, MEK produces solutions with low viscosity and high solids content.

**Sales Specification**

| Property | Unit | Min | Max | Method |
|---|---|---|---|---|
| Purity | % m/m | 99.5 | | ASTM D2804 |
| Water | % m/m | | 0.05 | ASTM D1364 |
| Total Alcohols | %m/m | | 0.5 | ASTM D2804 |
| Appearance | | Substantially Free of Suspended Matter | | ASTM D4176 |
| Color | Pt-Co | | 10 | ASTM D1209 |
| Density @20°C | g/mL | 0.804 | 0.806 | ASTM D4052 (4) |
| Refractive Index @20°C | | 1.378 | 1.380 | ASTM D1218 (4) |
| Acidity as Acetic acid | % m/m | | 0.003 | ASTM D1613 |
| Non Volatile Residue | g/100mL | | 0.002 | ASTM D1353 |
| Distillation, IBP | °C | 79.0 | | ASTM D1078 (4) |
| Distillation, DP | °C | | 80.5 | ASTM D1078 (4) |

(1) Guaranteed, (2) Typical, (3) Report Only, (4) Guaranteed spec with typical result

Product as produced complies with ASTM D740 Type I (Regular grade) and Type II (Urethane grade)

## Typical Properties

| Property | Unit | Method | Value |
|---|---|---|---|
| Density @20°C | kg/L | ASTM D4052 | 0.805 |
| Cubic Expansion Coefficient @20°C | (10^-4)/°C | - | 13 |
| Refractive Index @20°C | - | ASTM D1218 | 1.379 |
| Distillation, IBP | °C | ASTM D1078 | 79.0 |
| Distillation, DP | °C | ASTM D1078 | 80.5 |
| Relative Evaporation Rate (nBuAc=1) | - | ASTM D3539 | 3.7 |
| Relative Evaporation Rate (Ether=1) | - | DIN 53170 | 3.3 |
| Antoine Constant A # | kPa, °C | - | 6.18444 |
| Antoine Constant B # | kPa, °C | - | 1259.22 |
| Antoine Constant C # | kPa, °C | - | 221.758 |
| Antoine Constants: Temperature range | °C | - | -40 to +90 |
| Vapor Pressure @20°C | kPa | Calculated | 9.5 |
| Vapor Pressure @50°C | kPa | Calculated | 36 |
| Saturated Vapor Concentration @20°C | g/m³ | Calculated | 280 |
| Flash Point | °C | IP 170 | -4 |
| Auto Ignition Temperature | °C | ASTM E659 | 515 |
| Explosion Limit: Lower | %v/v | - | 1.8 |
| Explosion Limit: Upper | %v/v | - | 11.5 |
| VOC Content | g/L | - | 805 |
| Hildebrand Solubility Parameter | (cal/cm³)^½ | - | 9.3 |
| Hydrogen Bonding Index | - | - | 10.5 |
| Fractional Polarity | - | - | 0.510 |
| Dilution Ratio: SBP 100/140 | - | ASTM D1720 | 0.9 |
| Dilution Ratio: Toluene | - | ASTM D1720 | 4.1 |
| Freezing Point | °C | - | -86 |
| Surface Tension @20°C | mN/m | ASTM D971 | 24.7 |
| Viscosity @20°C | mPa.s | ASTM D445 | 0.42 |
| Dielectric Constant @20°C | - | - | 18.5 |
| Electrical Conductivity @20°C | pS/m | ASTM D4308 | 2*10^7 |
| Heat of Combustion (Net) @25°C | kJ/kg | - | 32000 |
| Heat of Vaporization @Tboil | kJ/kg | - | 433 |
| Specific Heat @20°C | kJ/kg/°C | - | 2.19 |
| Thermal Conductivity @20°C | W/m/°C | - | 0.15 |
| Azeotrope with Water: Boiling Point | °C | - | 73.4 |
| Azeotrope with Water: Solvent Content | % m/m | - | 88.7 |
| Miscibility @20°C: Solvent in Water | % m/m | - | 25 |
| Miscibility @20°C: Water in Solvent | % m/m | - | 12 |
| Molecular Weight | g/mol | - | 72 |

| | |
|---|---|
| | (#) In the Antoine temperature range, the vapor pressure P (kPa) at temperature T (°C) can be calculated by means of the Antoine equation: log P = A - B/(T+C) |
| **Test Methods** | Copies of copyrighted test methods can be obtained from the issuing organisations:<br><br>American Society for Testing and Materials (ASTM) : www.astm.org<br>Energy Institute (IP) : www.energyinst.org.uk<br>Deutsches Institut für Normung (DIN) : www.din.de<br><br>Shell Method Series (SMS) methods are issued by Shell International Chemicals B.V., Shell Research and Technology Centre, Amsterdam, The Netherlands. Copies of SMS can be obtained through your local Shell Chemicals company.<br><br>For routine quality control analyses, local test methods may be applied that are different from those mentioned in this datasheet. Such methods have been validated and can be obtained through your local Shell Chemicals company. |
| **Quality** | Methyl ethyl ketone does not contain detectable quantities of heavy metals, chlorinated compounds or polycyclic aromatic hydrocarbons. |
| **Storage and Handling** | Provided proper storage and handling precautions are taken we would expect Methyl ethyl ketone to be technically stable for at least 12 months. For detailed advice on Storage and Handling please refer to the Material Safety Data Sheet on www.shell.com/chemicals. |
| **Hazard Information** | For detailed Hazard Information please refer to the Material Safety Data Sheet on www.shell.com/chemicals. |
| **Contact** | For further information, please visit our website at www.shell.com/chemicals, contact your local Shell representative, or call the 'Shell Chemicals' order center at 1 866 89 SHELL (1 866 897 4355). |
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