Klucel™ hydroxypropylcellulose
Industrial Grade, Summary of Properties and Uses

Description
Klucel hydroxypropylcellulose (HPC) is a nonionic water-soluble cellulose ether with a versatile combination of properties. It combines organic solvent solubility, thermoplasticity, and surface activity with the thickening and stabilizing properties of other water-soluble cellulose polymers.

Key Attributes
- Klucel HPC is soluble in many polar organic solvents and in water below 38°C, but is insoluble in water above 45°C.
- Klucel HPC is highly surface-active, with low surface and interfacial tensions of solutions. It has a wide range of compatibility with latexes and with synthetic and natural colloids.
- Klucel HPC is available in a wide range of viscosities with measurements reported at varying concentrations in water.
- Thermoplastic and can be injection molded and extruded.
- In films and coatings, Klucel HPC is heat-sealable, extremely flexible without plasticizers, and non-tacky at high humidity.

Applications and Usage Notes
Klucel HPC is versatile: it is used in a wide variety of applications including:
- **Coatings** - Film-former, rheology control
- **Adhesives** – Solvent based systems or hot melts
- **Extrusions and moldings** - Thermoplastic resin
- **Paper Coatings** - Film-former, rheology control
- **Paint Removers** – Thickener, retards solvent loss, improves cling on vertical surface
- **Encapsulation** – Stabilizer, wall forming polymer
- **Printing & Inks** – Lithography- alcohol replacement, water & solvent inks- thickener, for both aqueous and non-aqueous systems
- Other applications requiring a film-former, thickener, stabilizer, suspending agent, film barrier, thermoplastic, or protective colloid.

Ashland Specialty Ingredients
ashland.com
Typical Product Properties

Table I
Viscosity\(^{(a)}\) of Various Solution Types, cps

<table>
<thead>
<tr>
<th>Viscosity Type</th>
<th>1</th>
<th>2</th>
<th>5</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>1,275</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>M</td>
<td>-</td>
<td>3,500</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G</td>
<td>-</td>
<td>125</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>J</td>
<td>-</td>
<td>-</td>
<td>125</td>
<td>450</td>
</tr>
<tr>
<td>L</td>
<td>-</td>
<td>-</td>
<td>65</td>
<td>175</td>
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<tr>
<td>E</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>250</td>
</tr>
</tbody>
</table>

\(^{(a)}\)Viscosities determined at 25°C, using a Brookfield LVF viscometer with spindle and speed combinations depending on viscosity level. Ranges shown in this table are not necessarily current specifications.

Table II
Typical Properties
Klucel™ hydroxypropylcellulose, as shipped

Appearance ........................................................................................................ off-white powder
Particle size, %, min
Through U.S. 30 mesh ................................................................................ 80
Through U.S. 20 mesh ................................................................................ 98
Moisture content, as packed, %, max ....................................................... 5.0
Softening temperature, °C ........................................................................... 100 - 150
Burnout temperature in N\(_2\) or O\(_2\), °C .................................................. 450 - 500
Solubility
In water .......................................................................................................... clear, smooth solutions below 38°C
In organic solvents ...................................................................................... dissolves easily in many polar organic solvents to give clear to hazy solutions.

Klucel hydroxypropylcellulose Solutions in Water
pH, industrial grades ............................................................................... 5.0 - 8.5
Surface tension, \(^{(b)}\) dynes/cm ............................................................... 43.6
Interfacial tension, \(^{(b)}\) in water vs refined mineral oil, dynes/cm .......... 12.5

\(^{(b)}\)0.1% concentration.

CASRN: 9004-64-2
CAS Name: Cellulose, 2-hydroxypropyl ether

Packaging Information

<table>
<thead>
<tr>
<th>Product</th>
<th>Physical Form</th>
<th>Pkg Type</th>
<th>Net Wgt (lbs)</th>
<th>Net Wgt (kgs)</th>
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</thead>
<tbody>
<tr>
<td>Klucel H</td>
<td>Powder</td>
<td>Fiber Drum</td>
<td>100lbs</td>
<td>45.36 kgs</td>
</tr>
<tr>
<td>Klucel M</td>
<td>Powder</td>
<td>Fiber Drum</td>
<td>100lbs</td>
<td>45.36 kgs</td>
</tr>
<tr>
<td>Klucel G</td>
<td>Powder</td>
<td>Fiber Drum</td>
<td>100lbs</td>
<td>45.36 kgs</td>
</tr>
<tr>
<td>Klucel J</td>
<td>Powder</td>
<td>Fiber Drum</td>
<td>100lbs</td>
<td>45.36 kgs</td>
</tr>
<tr>
<td>Klucel L</td>
<td>Powder</td>
<td>Fiber Drum</td>
<td>100lbs</td>
<td>45.36 kgs</td>
</tr>
<tr>
<td>Klucel E</td>
<td>Powder</td>
<td>Fiber Drum</td>
<td>100lbs</td>
<td>45.36 kgs</td>
</tr>
</tbody>
</table>

X Grade- Fine Grind-- Available for grades upon request
F Grade- Food Grade--Available for grades upon request
Product Safety Information

Read and understand the Safety Data Sheet (SDS) before using this product.

To learn more, visit ashland.com

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