

## O63700 - O63712 Klucel™, Hydropropylcellulose

O63700 Klucel™ E

O63706 Klucel™ G

O63710 Klucel™ M

O63712 Klucel™ H

**CAS Number:** 9004-64-2  
**CAS Name:** Cellulose, 2-hydroxypropyl ether

Klucel hydropropylcellulose (HPC) is a non ionic water-soluble cellulose ether with a versatile combination of properties. It combines organic solvent solubility, thermo plasticity, and surface activity with the thickening and stabilizing properties of other water-soluble cellulose polymers.

Klucel is a white powder with no odor or taste. It is available in various chain lengths, which means different viscosity.

### Properties and Uses

Klucel is soluble in many polar organic solvents and in water below 38°C, but is insoluble in water above 45°C. Klucel is highly surface-active, with low surface and interfacial tensions of solutions.

In films and coatings, Klucel is heat-sealable, and it is extremely flexible without plasticizers.

The versatility of Klucel is apparent in a wide variety of pharmaceutical applications, including tablet coatings, controlled-release products, encapsulation, tablet binding and as a suspension aid.

A solution in non-aqueous/denatured ethyl alcohol enables a water spot-free gluing of wall-paper or stabilization of paints.

### Viscosity Specification of Klucel, Brookfield LVF at 25°C, mPa.s

Type	Concentration in Water by weight			Molecular Weight
	1 %	2 %	10 %	
H	1275 - 3500	30000	-	1150000
M	-	3500 – 7500	-	850000
G	-	150 – 400	-	370000
E	-	7	250 – 800	80000

Type	Concentration in Anhydrous Alcohol by weight		
	1 %	2 %	10 %
H	1000 - 4000	-	-
M	-	3000 – 6500	-
G	-	75 – 400	-
E	-	-	150 – 700

## Typical Properties of Klucel

### Polymer as-is

Appearance	off-white, tasteless powder
Bulk density, g/ml	0.5
Softening temperature, °C	100 - 150
Burnout temperature in N <sub>2</sub> or O <sub>2</sub> , °C	450 - 500

### Solutions in water

Specific gravity, 2% solution at 30°C	1.010
Refractive index, 2% solution	1.337
Surface tension, 0.1% conc., N/m	0.0436
Interfacial tension, 0.1% in water vs. refined mineral oil, N/m	0.0125
Bulking value in solution, 1/kg	0.334

Product	Viscosity in mPa.s	Soluble in
<b>O63700 Klucel E</b>	7 thin	water, ethanol, acetone, etc.
<b>O63706 Klucel G</b>	300 medium	cold water, polar solvents
<b>O63710 Klucel M</b>	5000 thick	cold water, polar solvents
<b>O63712 Klucel H</b>	30000 extra thick	cold water, polar solvents

### Regulatory Status

Klucel is used in drug products as an inert ingredient. The Klucel Pharm grades meet the specifications of the current edition of the European Pharmacopoeia, the National Formulary and the Japanese Pharmacopoeia.

### Packaging and Storage

Klucel is a non-perishable powder. It is recommended to use the product in rotation on a first-in first-out basis. The product should be stored under dry and clean conditions in its original packing and away from heat. The product is hygroscopic. The packaging is selected in a way to avoid ingress of moisture, but the water content of the packed product will/may increase if not stored dry.

### Product Safety

According to EC legislation on dangerous substances and preparations these products are not hazardous. We do not have food quality conditions for packaging; therefore these products are not suitable as food additives.