

NUMBER 4625-1 (Supersedes 4625)

## **Benecel™ high purity hydroxypropyl methylcellulose**

*For personal care*

Benecel high purity hydroxypropyl methylcellulose (HPMC) products are used in many different cosmetic and personal care applications. Functional properties of the product include reversible hot water gelation, water binding and retention, thickening, film formation, binding, emulsification, suspending and stabilizing abilities.

### **Typical applications in personal care**

Benecel hydroxypropyl methylcellulose products are used in a variety of applications in personal care and cosmetics. Examples are as follows:

- shampoo
- liquid bubble bath concentrate
- liquid soap and body wash
- hair styling products
- lotions and creams

In particular, Benecel hydroxypropyl methylcellulose is chosen for its foam enhancing properties in surfactant systems. When used in a shampoo or body wash, the HPMC polymer helps with formation of bubble structure, leading to richer, longer lasting lather

### **Types and Specifications**

The family of Benecel products have been designated as follows:

Benecel E, F and K Types : hydroxypropyl methylcellulose (HPMC or MHPC)



## Viscosity and other specifications of Benecel

The standard method for the viscosity measurement of aqueous solutions prescribes the use of Ubbelohde (capillary) viscometers, at 20 °C for products with viscosity less than 600 mPa.s at 2% concentration and the use of Brookfield (rotational) viscometers for products with viscosity greater than or equal to 600 mPa.s at 2%.

Benecel type	Viscosity range, mPa.s	Methoxyl content, %	Hydroxypropyl content, %	Gelation temperature, °C	Particle size, laser, in $\mu\text{m}$
E50	40 – 60	28 – 30	7 – 12	~58	Dv90: 170 min – 250
E4M	2,700 – 5,040	28 – 30	7 – 12	~58	Dv90: 170 min – 250
E10M	7,500 – 14,000	28 – 30	7 – 12	~58	Dv90: <295
F50	40 – 60	19 – 30	3 – 12	59 – 67	Dv90: 170 min – 250
F4MC	2,700 – 5,040	19 – 30	3 – 12	59 – 67	Dv50: 250 min – 450
K99 C	80 – 120	20 – 24	7 – 12	73 – 81	Dv50: 250 min – 450
K4M	2,700 – 5,040	20 – 24	7 – 12	75 – 85 <sup>1</sup>	Dv90: 170 min – 250
K35M	26,250 – 49,000	20 – 24	7 – 12	75 – 85 <sup>1</sup>	Dv90: 170 min – 250
K100M	75000–140000	20 – 24	7 – 12	75 – 85 <sup>1</sup>	Dv90: 170 min – 250
K200M	150,000 – 280,000	20 – 24	7 – 12	75 – 85 <sup>1</sup>	Dv90: 170 min – 250

<sup>1</sup>estimated

### Other specifications of Benecel high purity hydroxypropyl methylcellulose derivatives

Ash content, as sulphate ash for all types	1.5% max.
Moisture content, as packed	5% max.
NaCl	0.8% max.
Chlorides	0.5% max.

### Typical properties of Benecel high purity hydroxypropyl methylcellulose derivatives

#### Polymer as-is

Appearance	white to off-white powder
Bulk density, g/l	200–500
Decomposition temperature	>220 °C
BOD <sub>5</sub> , product	0–0.1 mg O <sub>2</sub> /mg

#### Solutions in water typical values

Density, at 2%, 20 °C	1.0032 g/ml
Surface tension, 0.1%, 20 °C	45–55 mN/m
pH of 1% solution, 20 °C	5.0–8.0

## Properties and Uses

The products are soluble in cold water and in some mixed organic solvents, yet insoluble in hot water. Solutions are surface active. The products have broad compatibility and provide excellent film formation, good water retention and binding. Thermal gelation occurs at temperatures above 50 °C. These functional properties are used in many cosmetic and personal care products.



## Packaging and Storage

The products are supplied in multiply paper bags with polyethylene inner liner, with the following net weights:

Type K100M	: 16 kg
Type F4M C	: 18 kg
<b>Type E10M, K4M, K35M, K200M</b>	<b>: 18.14 kg</b>
Type K99 C, K100 LV	: 20 kg
<b>Type E50, F50, F50 R</b>	<b>: 25 kg</b>

Benecel high purity hydroxypropyl methylcelluloses do not have an expiration date. 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

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

## Toxic Substances Information

CAS Name:	CAS Number:	INCI Name
Hydroxypropylmethylcellulose	9004-65-3	Hydroxypropyl Methylcellulose

