Ashland Specialty Ingredients
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NUMBER 4034-6 (Supersedes 4034-5)

Culminal™ methylcellulose derivatives

Description

Culminal methylcellulose derivatives are cellulose ethers that, when dissolved in water, offer a variety of functional properties. Culminal products are powders used as thickeners, protective colloids, stabilizers, suspending aids and water-retention agents in many industrial applications.

Key Attributes

Culminal cellulose ethers have many functional properties such as:

- Water retention
- Thickening and stabilizing action
- Binding ability
- Adhesion
- Protective colloid
- Suspension effect
- Emulsion stabilization
- Film formation
- Thermogelling properties

Applications and Usage Notes

Culminal methylcellulose derivatives are easily soluble in cold water. The product is not soluble in hot water. Culminal methylcellulose derivatives are non-ionic cellulose ethers and are compatible with many surfactants and polymers such as starch, guar and alginates. Solutions of Culminal methylcellulose derivatives are pseudoplastic; some solutions show thixotropy. The solution viscosity is a function of the temperature, as the latter increases, viscosity decreases. When reaching the gel temperature gelling and flocculation of the polymer will occur. This process is reversible upon cooling. Viscosity is nearly independent of the pH over a wide range.

Typical applications are:

- **Adhesives –** Adhesive, Binder, Film Former
- **Emulsions –** Rheology Modifier, Stabilization Agent
- **Ceramics –** Extrusion Aid, Binder, Rheology Modifier, Stabilization Agent
- **Metal Processing –** Rheology Modifier, Stabilization Agent
- **Mineral Slurries –** Rheology Modifier, Stabilization Agent
- **Mining –** Rheology Modifier, Stabilization Agent
- **Paint Removers –** Rheology Controller, Thickener, Film Former
- **Paper Coatings –** Rheology Modifier, Stabilization Agent, Film Former
- **Pulp & Paper –** Rheology Modifier, Stabilization Agent
- **Suspension Polymerization –** Protective Colloid, Rheology Modifier, Stabilization Agent
- **Tobacco –** Adhesive, Binder, Rheology Modifier, Stabilization Agent (subject to applicable regulations with respect to each application and usage)

Usage Notes

Either of the two procedures outlined below may be used for dispersing methylhydroxypropylcellulose (MHPC).

- Cold Procedure (for concentrations less than 5%):
  Carefully sift the Culminal™ methylhydroxypropylcellulose (MHPC) into the vortex of well-agitated water. Discontinue agitation once the polymer particles begin to swell. Allow the particles to swell for 30 to 60 minutes. Agitate the solution until it is homogeneous, at which time it is ready to use.

- Hot/Cold Procedure:
  Add the Culminal MHPC by stirring into water that has been heated to boiling. Use between one-third and one-half of the total water required for the batch for this dispersion process. After the powder is dispersed, add cool water to reach the final amount of solution needed. Agitate continuously until the powder has completely dissolved.

Typical Product Specifications

Chemically, Culminal products are ethers of cellulose and methylchloride, ethylene oxide or propylene oxide. These cellulose derivatives have been designated as follows:

Culminal MC methylcellulose
Culminal MHEC methylhydroxyethylcellulose
Culminal MHPC methylhydroxypropylcellulose

These designations are followed by a viscosity number, as listed below. "R"-types have retarded solubility.

Viscosity specification of Culminal, Brookfield RVT at 20°C, mPa·s
Aqueous viscosity specification at 20 rpm, on bone-dry basis.

Product type	Viscosity at 2%	Product type	Viscosity at 2%	
MC 2000 S	2.100 - 2.900	MHPC 50	40 - 55	
MC 3000 P	3.500 - 4.700	** MHPC 100	90 - 125	
		MHPC 400 R	400 - 550	
MHEC 3000 PFSM	3.500 - 4.700	MHPC 500 PF	400 - 600	
MHEC 6000 PFS	6.500 - 8.000	MHPC 724	15.000 - 22.000	
MHEC 6000 PR	6.000 - 8.000			
MHEC 8000	8.500 - 11.500	MHPC 3000 P1R	3.500 - 4.700	
MHEC 15000 PFF	18.000 - 24.000	MHPC 6000 PF	6.000 8.000	
MHEC 15000 PFR	15.000 - 20.500			
MHEC 15000 PFS	12.750 - 17.250	MHPC 20000 P	20.000 - 27.500	
MHEC 25000 PFF	26.000 - 34.000	MHPC 20000 PFR	20.000 - 27.500	
MHEC 35000 P1R	35.000 - 48.000	MHPC 20000 PR	20.000 - 27.500	
MHEC 40000 P1	38.000 - 51.500	MHPC 20000 R	20.000 - 27.500	
MHEC 40000 PF	38.000 - 51.500	MHPC 20000 S	10.000 - 20.000	(1)
		MHPC 65000 PF	58.000 - 70.000	

(1) Organo viscosity measured in a 1.5% IPA / Methylenechloride (1/7) solution

** Indicates “Made To Order"

Other Specifications of Culminal methylcellulose derivatives

Particle size in micrometers

Regular, S and R-types with the exception of:	Laser Dv50: 250 min. – 450 max.
Type MHPC 724	Laser Dv50: 80 max.
P, PR and P1-types	Laser Dv90: 255 min. – 330 max.
PF, PFR, PFF and PFS-types	Laser Dv90: 170 min. – 295 max.
P1R-types	Laser Dv90: 275 min. – 340 max.

Other specifications of Culminal™ methylcellulose derivatives (Ctd)

Appearance	White to brownish for MHPC 50 and MHPC 100, white to creamy for all other types.
Bulk density	350 - 650 g/l for MHPC 50 400 - 700 g/l for MHPC 100 200 - 500 g/l for all other types
Moisture content	8.5% max. for MHPC 50 and MHPC 100, 8.0% max. for all other types.

Packaging Information

Product	Physical Form	Pkg Type	Net Wgt (lbs)	Net Wgt (kgs)
Culminal MHPC 50	Powder	Bag	50 lb	25 kg
Culminal MHPC 50	Powder	Pallet	2,205 lbs	1000 kgs
Culminal MHPC 100	Powder	Bag	50 lb	25 kg
Culminal MHPC 100	Powder	Pallet	2,205 lbs	1000 kgs
Culminal (All other grades)	Powder	Bag	55 lb	25 kg
Culminal (All other grades)	Powder	Pallet	1,653 lbs	750 kg

Culminal methylcellulose derivatives are non-perishable products. It is recommended that the product be used 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 to avoid ingress of moisture, but the water content of the packed product will/may increase if not stored dry.

Product Safety Information

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

Toxic substances information

Product	CAS Name	CAS Number
Culminal MC	MC	9004-67-5
Culminal MHEC	HEMC	9032-42-2
Culminal MHPC	HPMC	9004-65-3

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