

Technical Data Sheet (TDS)

I. Product Characteristics

Instant solubility: Exhibits instant solubility.

Viscosity: Commonly has a viscosity in the range of 3000 - 4000 MPA.S. High viscosity version is 6000 MPA.S (1% aqueous solution at 25°C).

II. Requirements for CMC in Coatings Applications

Low viscosity: Required for good flow and leveling properties.

Good leveling: Ensures smooth coating surface.

Good film-forming: Helps in forming a continuous and durable film.

Low salt content: Minimizes potential negative effects.

Good stringiness: Contributes to certain application characteristics.

Good adhesion: Enhances the bonding of the coating.

III. Applications

1. **Paper coatings:** Used in paperboard surface coating, coated paper kaolin coating, and coated paper pearlescent pigment coating.
2. **Latex paints:** An important component in latex paint formulations.
3. **Other water-based coatings:** Such as water-based noise reduction coatings.
4. **Foundry coatings:** Plays a crucial role in improving the performance of foundry coatings.

In coated paper coatings, CMC is used in combination with PVA1799.

IV. Functions of Different Viscosity CMC in Coatings

High viscosity CMC: Serves as a thickener to increase the viscosity of the coating.

Medium viscosity CMC: Functions intermediate between high and low viscosity CMC.

Low viscosity CMC: Acts as a water retention agent to improve the dispersibility of the coating.

V. Applications in Different Coating Systems

1. Conventional coatings:

The macromolecular chain of CMC with hydroxyl groups undergoes hydration and entanglement with water, increasing the water phase viscosity. It has good compatibility in water or organic solvents and with pigments. It is commonly used as a thickener, dispersant, and stabilizer in the coating industry. Specific effects in water-soluble coatings include:

Good water resistance and durable film.

High film fullness, uniform film, and ability to achieve high gloss.

Acts as a stabilizer to prevent coating separation due to rapid temperature changes.

Serves as a protective colloid to maintain the stability of the coating system over a wide pH range.

As a thickener, it makes the coating uniform and achieves the ideal storage and application viscosity, avoiding severe stratification during storage.

Improves the leveling of the coating and enhances its anti-splashing and anti-sagging properties, thereby improving the application performance.

Enables uniform dispersion of pigments, fillers, and other additives in the coating, resulting in excellent colorant adhesion.

2. Latex coatings:

Latex coatings mainly consist of polymer and pigment water dispersions. The viscosity of CMC affects pigment sedimentation, brushability, rollability, film fullness, leveling, and sagging on vertical surfaces. CMC has good fluidity, low brushing resistance, and is easy to apply in latex coatings. It is used as a stabilizer, thickener, and water retention agent:

Has an excellent thickening effect and high thickening efficiency for latex coatings.

Gives the coating a certain viscosity, ensuring stability during storage without precipitation.

Prevents rapid water penetration into porous substrates and meets the water retention requirements when the emulsion content is high.

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Has few restrictions on the coating formulation and is less affected by latex type, dispersant, and surfactant.

After coating, the hydration between CMC and water is terminated, and the viscosity recovers to prevent sagging.

3. Foundry coatings:

CMC is a polymer compound with a multi-chain structure. After swelling with water, the straight chains open, stretch, and interact to form a network colloid. It can interact with sodium bentonite to effectively improve the suspension ability of sodium bentonite, greatly reduce the volume of sediment agglomeration, and prevent the sinking of refractory powder. It is often used to increase the suspension rate of foundry coatings and improve the coating viscosity:

Has excellent water-soluble thickening properties and effectively improves the viscosity and rheology of the coating.

Has good solubility and dispersibility, keeping solid substances suspended in the carrier fluid.

Promotes the suspension of refractory powder, preventing precipitation, stratification, and excessive penetration of the carrier fluid into the molding material.

Enhances the coating and covering ability of the coating and improves its brushability and leveling.

The powder in the coating adheres to each other after drying and firmly adheres to the mold and core surfaces.