Technical Tip

Aristoflex® AVC for Gels and Emulsions

Aristoflex® AVC (INCI: *Ammonium Acryloyldimethyltaurate/VP Copolymer*) functions as an aqueous gelling agent and thickener/stabilizer for oil-in-water emulsions. **Aristoflex® AVC** forms clear aqueous gels and viscous, transparent hydroalcoholic gels containing up to 70% ethanol. **Aristoflex® AVC** can be used to stabilize and thicken conventional surfactant emulsions and also provides excellent skin feel.

Surfactant-free "pseudo-emulsions" or "cream gels" can be prepared with **Aristoflex® AVC** as the sole emulsifier. **Aristoflex® AVC** cream gels have a creamy, non-gelatinous texture and provide a light, fresh, hydrating feel upon application. **Aristoflex® AVC** can stabilize up to a 15% hydrophobic phase without any other emulsifiers. This is due to the yield value provided by its cross-linked structure, which is capable of suspending oil droplets (or solids) in the water/polymer matrix. **Aristoflex® AVC** is compatible with typical cosmetic emulsifiers, moisturizers, emollients, silicones and sunscreen actives.

Typical use levels range from 0.5% - 2.0%.

*Additional benefits of **Aristoflex® AVC**:*

- Pre-neutralized, easy to use, low dust powder
- Dissolves smoothly in water with or without heating
- Disperses easily in oil with or without heating
- Effective at low pH (ca. 4)
- Compatible with organic solvents
- Improved UV light and shear stability versus select alternative synthetic thickeners
- May be used to produce cold-mix emulsions

Limitations:

Aristoflex® AVC is sensitive to electrolytes and is not suitable for use in certain surfactant systems (such as cleansing products) which may contain high levels of salts.

Aristoflex® AVC can be used in a broad pH range (4.0 – 9.0). Lower pH than 4.0 may lead to acidic cleavage of the polymer on prolonged storage resulting in viscosity loss. As **Aristoflex® AVC** is an ammonium salt, pH higher than 9.0 will release ammonia.

Working with Aristoflex® AVC

Clear Gel Processing:

Method I

(A) Combine all ingredients except **Aristoflex® AVC** and mix until clear (Heat if necessary and cool to 35ºC).

(B) Add **Aristoflex® AVC** and mix until a smooth gel is obtained.

Method II

(A) Add **Aristoflex® AVC** to water; mix until fully hydrated and clear.

(B) Add remaining ingredients one at a time and mix until a smooth gel is obtained.

Note: Aqueous gels will support microbial growth and should be preserved. Efficacy testing results of several NIPA® preservative systems in Aristoflex® AVC gels are available upon request.

Technical Tip

Emulsion Processing:
Aristoflex® AVC can be used to prepare O/W emulsions in both hot and cold processes.

Method I (Preferred)
(A) Disperse **Aristoflex® AVC** in the oil phase with the emulsifier (if using an additional emulsifier).
(B) Combine oil and water phases, and mix until homogeneous.

Note: Oil phase mixing vessel should be free of moisture to avoid premature hydration of polymer and creation of gel particles.

Method II
(A) Prepare emulsion by normal current practice.
(B) Post-add **Aristoflex® AVC** (dry powder or as aqueous gel premix) to the emulsion (can be added immediately, or after an initial mixing period, as desired).

Method III
(A) Combine oil and emulsifier in one phase.
(B) Add **Aristoflex® AVC** to water phase, mixing until a homogeneous gel is formed.
(C) Add (A) to (B)

Note: Although Method I is preferred; optimum method of processing is formulation-dependant and varies with processing equipment. For Method III, sweep mixing may be required depending on viscosity of aqueous phase. Emulsions may be homogenized if necessary but is not routinely required.