

Formulating with Polymers

Polymers such as UltraMaize, XanThix, HEC, and HPMC are all water dispersible. They form networks and swell in water to thicken a formula. Typically, these polymers are utilized by dispersing them into water while creating a vortex (moving water funnel). It's important to disperse each tiny particle separately prior to making contact with the water. If the particles are stuck together when they come in contact with the water, they will not separate, but will instead agglomerate or form "fish eye clumps". These clumps won't disperse properly and the formula may be ruined.

Some polymers are easy to disperse such as UltraMaize, HEC, and HPMC, but others are more difficult – such as XanThix. For all water formulations such as serums and styling aids, it may be helpful to pre-disperse the polymer into a small amount of glycerin and then disperse the mixture into the water.

These polymers can be used in emulsions to stabilize and build viscosity and enhance feel in application. When using these polymers in emulsions, it's much easier to disperse into the melted/hot oil phase. By dispersing into the oils, the particles will separate and each will be coated with oil. When the oil and water phases of the emulsion are combined, the oil coated particle will first interface with the oils, as the emulsion begins to form, the water soluble polymer will migrate into the water phase where it belongs.

Here's how it's done:

- 1) Heat the oil and water phases separately on a hot plate or other heat source. The Herbarie's Stainless Steel Beakers are perfect for making emulsions – use one for the water phase and one for the oil phase. Monitor the heating process constantly – solid lipids will melt quickly and can burn quickly.
- 2) Once the oils are hot and the solid lipids have melted, remove from heat and disperse the powdered polymer into the hot oils. Before adding the water phase to the oil phase, be sure the polymer particles are separate in the liquid oils.
- 3) Then add the hot/175F water phase to the oil phase as usual. Begin mixing and continue for approximately 15-30 minutes depending on which polymer is utilized. Once the phases are combined and mixed, the polymers will find their way to the water phase and will thicken as usual. No Fish Eyes - Easy Peasy!