Polymer Chemistry Innovations, Inc.

Slip casting

The slip is affected by temperature, humidity, and water quality (tap water versus purified water). This is a suggested starting point for developing a slip casting recipe.

Clay Mixture– 40 – 60% by volume is clay mix.
Below are some of many more possible components that can be in the clay mixture.

Silica	Talc	Bentonite
Ball clay	Kaolinite	Feldspar

Water – roughly 40-50% by weight.

Deflocculants – one or more of the deflocculants. The percent varies by deflocculant varies from 0.05 % - 1% by weight.

Sodium silicate* 0.2-0.3%	Sodium Hydroxide	Soda Ash 0.05-1%
Barium carbonate	Darvan 7 or 811	

Aquazol to add green strength and green density 0.5 – 5.0 % by weight
Aquazol 50 and Aquazol 500 most commonly used

*dilute 50:50 in water before use

Mix clay mixture, Aquazol, and water for several hours so that all the powder is incorporated. Aquazol dissolves in ambient temperature water with agitation. It can be dissolved ahead of time, or during mixing.

Determine specific gravity. The extreme range shown in literature and patents is 1.65-1.90. Typical industrial range is 1.75-1.85 depending upon industry. To adjust specific gravity add more clay to bring up, add more water to bring down.

Add deflocculants to adjust viscosity.

Benefits

Aquazol adds green strength and green density leading to less breakage and waste.

Aquazol has a clean burnout at 380 C in air with low residual ash.

Aquazol is water soluble for ease in use in recycling scrap up to 25% into slip casting mixture.