



Emulsion Polymers Consulting and Education, LLC

An international consulting group with offices in the USA (New Hampshire) and Canada (Ontario)

Corporate office: 39 Nute Road, Madbury, NH 03823-7500 USA www.epced.com

the wisdom of experience, the power of knowledge

Rheology of Mono- and Bimodal Latexes

Topical Outline for 2-hour Tutorial

1. Basic review of single-phase rheology
 - Rheometers
 - Newtonian and shear thinning viscosities
 - Real vs. apparent viscosity
2. Review of dispersion rheology for monomodal systems
 - Distance between latex particles at reasonable solids levels
 - Ideal particle packing arrangements
 - Viscosity vs. solids content behavior – upper limits
 - Ionic strength effects
 - Non-spherical particles and aggregates – effective on viscosity
3. Particle packing analysis – data from alternate systems, useful models
4. Viscosity of bimodal systems
 - Conceptual aspects
 - Effect of ratio of particle sizes
 - Viscosity reductions at various solids levels
 - Maximum and ultimate solids contents for fixed viscosities
5. Particle size distributions (continuous, not bimodal) – effect on viscosity
6. Trimodal systems
7. Reactor heat load conditions for *in-situ* production of small particles in presence of existing large particle latex

September 2023