

## Influence of mixing temperature on xanthan conformation and interaction of xanthan–guar gum in dilute aqueous solutions

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### Abstract

Dynamic viscoelastic and intrinsic viscosity properties of xanthan, guar, and xanthan–guar blends in dilute aqueous solutions were investigated by using an oscillating capillary rheometer. Influence of mixing temperature on xanthan conformation and interaction with guar is discussed. Synergistic interaction occurred at mixing temperatures of 25 and 80 °C, but a stronger synergistic interaction was observed at mixing temperature 80 °C. The viscous component for all gum solutions was greater than that of the elastic component, which indicated a liquid-like behavior in the dilute regime for the polysaccharide solutions. For both mixing temperatures, the relative viscosities and elasticities of xanthan and guar blends were higher than the relative viscosities and elasticities calculated for xanthan and guar. The relative viscosities and elasticities of xanthan and guar blends were higher at 80 °C than at 25 °C. The intrinsic viscosities of xanthan and guar blends were lower than those calculated from the weight averages of the two, and significantly decreased as the xanthan content increased. The results indicate that xanthan was crucial in controlling the blend viscosity, and that the molecular binding occurred between xanthan and guar.

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### Keywords

Xanthan; Guar; Synergistic interaction; Viscoelastic; Intrinsic viscosity; Mixing temperature

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