

Rheology of liquid crystalline phases of alkyloxybenzylidene toluuidines

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Abstract

A unique viscometer of the CS rheometer viscometer class designed at the Kazan State University of Technology is used to measure viscosities of two p-n-alkyloxybenzyliden-p-toluidines in the entire temperature range of the liquid crystalline state and transition into an isotropic liquid. The measured shear stresses and flow rates are used to calculate shear rates and plot flow and viscosity curves. The liquid crystalline phase and isotropic liquid are demonstrated to possess Newtonian viscosity, whose viscous flow activation parameters are calculated in the temperature range under study. The results are discussed from the standpoint of intermolecular interactions and structural details of the liquid crystalline phase. © 2010 Pleiades Publishing, Ltd.

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