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# REOLOGICAL EXPERIMENTS AND MODELING OF VISCOELASTIC PAINTS

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In this work, the viscoelastic behavior of viscoelastic paints in small-amplitude oscillatory, steady, unsteady simple-shear flows and thixotropy are analyzed with the Bautista-Manero-Puig model (BMP) constitutive equation, consisting in the Upper Convected Maxwell equation coupled to a kinetic equation to account for the breakdown and reformation of the fluid structure. A spectrum of relaxation times is considered and related to the association dynamics between hydrophobic groups along the HASE backbone and physical entanglements in the paint. Viscoelastic response is similar to the transient network assembled through hydrophobics associations, where the kinetic of chain breakage and reformations is consistent with the classical description of transient network formulations. The model accounts for the deviations from the Cox-Merz rule and predicts observed limiting behaviors at high strain rates in stress relaxation and inception of shear flow. Thixotropy was analyzed imposed the same stress cycle at different cycle times. [1] Calderas F, Sánchez Solís A, Maciel A, Manero O (2008) The transient flow of the PETPEN-Montmorillonite clay nanocomposite. Macromex 2008 [2] O. Manero, F. Bautista, J.F.A. Soltero, J.E. Puig, Dynamics of worm-like micelles: the Cox-Merz rule, J. Non-Newtonian Fluid Mech. 106 (2002) 1-15.