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THE CONTINUOUS SQUEEZE FLOW FILM OF A COMPLEX LIQUID

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The viscoelastic behavior of a complex structural liquid in a squeeze flow is analyzed using the Bautista-Manero-Puig (BMP) constitutive equation, consisting on the upper convective Maxwell equation with an evolution equation representing the changes of structure induced by the flow. This flow is usually simulated allowing a continuous flow of liquid into the narrow gap between two circular plates though the lower plate. To zero order, it is found that the normal force on the upper disc is directly related to shear dependent viscosity. To first order, results similar to those found with the six constants Oldroyd-B fluid are found, i.e. the effects due to elasticity are significant. In addition, asymptotic expressions are developed for the force to zero and first order to lower and upper shear rates. Finally, theoretical results are predicted using rheometric data for an aqueous wormlike micellar solution of cetyl trimethyl ammonium tosilate (CTAT) at different concentrations.