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**The Role of Extensional Viscosity in Sedimentation of Dense Suspensions** THEODORE BRZINSKI, DOUGLAS DURIAN, University of Pennsylvania — When two particles in a viscous fluid approach contact the motion of the interstitial fluid is dominated by extensional flows. We are interested in how the details of these flows influence the sedimentation of dense suspensions. To highlight the effects of extensional flows on particle motion we compare systems in which the fluids have the same shear viscosities, but drastically different extensional viscosities. We enhance the extensional viscosity by adding a flexible, high molecular weight polymer. In the case of a system without polymer there is a dense, static packing which grows from the bottom of the container, a region which remains at the initial grain density and settles at a constant velocity, and a clear supernatant at the top. In the polymeric fluid particles settle more slowly, and rather than sedimenting directly from the initial density to a static packing there is a long consolidation process during which the particle density increases at a constant rate.

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