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The rheological behavior of industrial and domestic wastewater sludge

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Abstract The aim of this work was to characterize the rheological behavior of the sludge proceeding from the treatment of mixed industrial and domestic wastewater, with a view to its subsequent processing: mixing, filtration, dewatering. Rheometric tests were performed with coaxial cylinders rheoviscometer, RHEOTEST 2.

After the determination of flow curves $\tau = f(\dot{\gamma})$ for mass fraction of suspended solids in the range: 0.227-0.340, it was found that the rheological behavior of this specific sludge is better described by the Bingham model, with moderate shear stress values, even at high shear rates. This indicates that processing this type of sludge will involve moderate energy consumption. The rheological parameters determined in this study can serve to the design of the equipment in different stage of the treatment process.

Keywords: Bingham model, non-Newtonian fluids, sludge rheology, thixotropy

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