FLOWABILITY OF GROUND LOBLOLLY PINE

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Biomass, such as wood chips, is a bulk material and therefore has the typical flow problems associated with bulk materials. Different material properties of ground loblolly pine chips were tested to quantify their effect on the flowability of the chips; the properties tested were feedstock type (clean, dirty, residue), particle size (ground through 1/8" and 1/16" screens), and moisture content (10% and 30% w.b.). All samples were run through a series of tests including a flow test which calculated the hopper half angle and outlet diameter of a hopper required for mass flow of the wood chips. These dimensions were used as parameters for comparing the effects of the material properties of the chips on their flowability. Results obtained show that flowability generally improved for ground clean chips with an increase in particle size. At the smaller particle size (i.e. samples ground through the 1/16" screen), the ground "dirty" chips had the best flow properties of the three different types of samples. At the larger particle size (i.e. samples ground through the 1/8" screen), the flowability of ground clean and dirty chips were similar while the residues' flowability was the worst. Experimentation on the effect that moisture content has on flowability is currently ongoing and the results will be discussed during the presentation.