

Batch Biodrying of Pulp and Paper Secondary Sludge: Influence of Initial Moisture Content on the Process

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Abstract : Biodrying aims at removing water from biowastes and has been mostly studied for municipal solid wastes (MSW), while few studies have dealt with secondary sludge from the paper and pulp industry. The goal of this study was to investigate the effect of initial moisture content (MC) on the batch biodrying of pulp and paper secondary sludge, using rice husks as bulking agents. Three initial MCs were studied (54, 65, and 74% w.b.) in closed batch laboratory-scale reactors under adiabatic conditions and with a constant air-flow rate (0.65 l min⁻¹ kg⁻¹ wet solid). The initial MC of the mixture of secondary sludge and rice husks showed a significant effect on the biodrying process. Using initial moisture content between 54-65% w.b., the solid moisture content was reduce up to 37 % w.b. in ten days, getting calorific values between 8000-9000 kJ kg⁻¹. It was concluded that a decreasing of initial MC improves the drying rate and decreases the solid volatile consumption, therefore, the optimization of biodrying should consider this parameter.

Keywords : biodrying, secondary sludge, initial moisture content, pulp and paper industry, rice husk

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