Transport velocity of solids in gas solid fluidized system

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Keywords: Fluidized bed, Transport velocity, Solid inventory, Cold model

Solid wastes are economically disposed of by circulating fluidized bed combustors. Therefore, it is important to know about the transport velocity of solid particles in these reactors to get better idea about residence time of such particles. In this study, the transport velocity (Utr) of twelve different solid particles range from 8 micron to 1mm in mean particle diameter was determined by the emptying time method in a 5 cm inner dia plexi glass cold model fluidized bed. Influence of solid inventory, density and angle of column on transport velocity along with solid to gas mass ratio (Ms/Mg) was analyzed. The experimental data was compared with the available correlations for transport velocity and a new amended equation was proposed to predict the transport velocities of Geldart type A, B C and D particles along with the incorporation of riser angle correction factor to existing Utr predicting relationship.

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