

Effect of riser angle on transport velocity in a gas fluidized bed

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A hydrodynamic study of Geldart's A, B, C and D particles were conducted in a 0.05 m I.D and 1 m in height plexi glass fluidized system. The transport velocity of 7 different particles of range from 22 to 872 μm with density (2416 to 2591 kg/m^3) and repose angle (24 to 31 degree), was determined by emptying time method. Besides, particle size and density, influence of riser column angle (45°, 65°, 78°, 90°) on transport velocity was also investigated thoroughly. An exponential increase in U_{tr} observed with increase in deviation from riser 90° angle. The data was compared with existing correlation for U_{tr} and a new amended equation was proposed for the prediction of U_{tr} at 90°. A new method was also proposed to find the U_{tr} at different riser angle.