

Measurement of Transport velocity in vertical to horizontal fluidized bed

Muhammad Shahzad Khurram^{*}, , 1

Department of Chemical Engineering, Konkuk University, Seoul 143-701, Korea; ¹Korea Institute of Energy Research, 305-343, Daejeon, Korea
(choijhoo@konkuk.ac.kr^{*})

A study was conducted to investigate the effect of angle on the transport velocity (u_{tr}) of Geldart's particles (22 μm to 872 μm) in a 0.05 m I.D and 1 m in height plexi glass fluidized system. The transport velocity was determined by emptying time method for riser angle from 0° to 90° from the horizontal. Empty time was calculated as a function of riser pressure drop at a certain velocity for riser angles 45° to 90°. While, calculated empty time for angle 0° to 30° was based on visual observation. The transport velocity decreased with increase of angle from 0° to 90° from the horizontal. There was a sharp increase in transport velocity of particles at their repose angle was observed, which was more pronounced in case of small particles. A new method was proposed to find the pickup velocity for horizontal pneumatic transportation. A correlation was also presented to measure u_{tr} for different angle of riser.