

## Abstract

This paper presents an experimental study of the physical characteristic effects of large particles on hydraulic transport in a horizontal pipe. The particles are spherical and are large with respect to the diameter of the pipe (8%, 10%, 16% and 25%). Experiments were done to test the important parameters in solid transport (pressure, velocity, *etc.*). As a result, the relationship between the pressure gradient forces and the mixture velocity was substantially different from the pure liquid flow. However, in a single-phase flow a monotonous behavior of the pressure drop curve is observed, and the curve of the solid particle flow attains its minimum at the critical velocity. The regimes are characterized with differential pressure measurements and visualizations.