

Koefisien Gesek Pipa Kasar dengan Biopolimer Guar Gum

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Abstrak

Luminal flow and turbulent of dilute polymer guar gum (fatter) solutions in smooth and in rough pipes was studied. This experiment uses a 25.4 mm diameter pipe (PVC), which is roughened by (k) 0, 34, 0.8, and 1.59 mm roughness values of sand grain and 250, 500, and 1000 ppm for additive concentration. The results show that flow properties are influenced by polymer addition and surface roughness. In the transition and turbulent flow regime without additive, the increasing of friction coefficient appeared to be affected by wall condition alone. Addition of polymer to water is effective for rough pipe. For example, with addition of 1000 ppm of polymer, drag in $k/D = 0.03$ rough pipe was reduced by 24 percent at Reynolds number 2×10^4 , whereas in 250 ppm addition, tested drag was reduced only 5 percent.