

Critical micelle concentration and the effect of solution age on drag reduction performance of anionic surfactants

ABSTRACT

In the present study, Ammonium lauryl sulfate was introduced as new drag reducing agent in aqueous media flowing through pipelines. A built-up rig with ratio of pipe length to diameter (L/D) is equal to 59 was used to achieve the purpose of this work which to test the critical micelle concentration and the effect of using different ages of solution for 300ppm (wt) of anionic surfactants. The drag reduction performance of the surfactant under investigation was also analyzed for different concentrations and flow rate of anionic surfactants, which 200ppm, 300ppm, 400ppm, 500ppm and 600ppm, respectively. It was found that the starting point of critical micelle concentration of ammonium sulfate lauryl was detected within range 140 to 200 ppm. The highest drag reduction was achieved is 50% at Re equal to 11235 for 600ppm of solution and the fresh solution gave better drag reduction compared to other ages of solution. The drag reduction decreases as the age of solution increases. After 4 days, the ammonium lauryl sulfate increases the drag in pipes.