Investigating the Degradation Resistance Improvement of Polymer Surfactant Complex Drag Reducing Agent

Hayder A. Abdulbari [a], Esmail A.M. Basheer[b], Ainoon Shabrin[b], Wafaa Kamil Mahmood[a]
[a]Centre of Excellence for Advanced Research in Fluid Flow, University Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang Darul Makmur
[b]Faculty of Ckemical and Natural Resources Engineeering, University Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang Darul Makmur.

ABSTRACT
Polymers-Surfactant complex efficacy in reducing the drag is of an interest subject in drag reduction research. Turbulent drag reduction (DR) efficiency of Sodium Polystyrene Sulfonate (NaPSS) sodium Alkylbenzene sulfonate complex was studied in a rotating disk apparatus. The solution complex was prepared by varying the concentration of the polymer between 100 to 1200 ppm and the surfactant between 100 to 700ppm. Measurement of torque values were recorded for each sample. The NaPSS (Sodium Polystyrene Sulfante) was found to have an ability to reduce the drag in the turbulent flow. A significant improvement was recorded for the addition of tiny amount of surfactant to the polymer system compare to the pure polymer drag reduction. At high surfactant concentration, it was found that the polymer drag ability decrease. The polymer was degraded when it is subjected to a high shear stress. The degredation resistance was increased by the addation of the surfactant to the polymer solution at concentration range of 100ppm to 400ppm of surfactant.

KEYWORDS: Additives, Complexes, Drag Reduction, Pipes, RDA

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