

Economic Viability of Using Guar Gum as a Viscofier in Water Based Drilling Fluids

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Abstract : Interest in cost effective drilling has increased substantially in the past years. Economics associated with drilling fluids is needed to be considered seriously for lesser cost per foot in planning and drilling of a wellbore and the various environmental concerns imposed by international communities related with the constituents of the drilling fluid. Viscofier such as Guar Gum is a high molecular weight polysaccharide from Guar plants, is used to increase viscosity in water-based and brine-based drilling fluids thus enabling more efficient cleaning of the bore. Other applications of this Viscofier are to reduce fluid loss by giving a better colloidal solution, decrease fluid friction and so minimising power requirements and used in hydraulic fracturing to increase the recovery of oil and gas. Guar gum is also used as a surfactant, synthetic polymer and defoamer. This paper presents experimental results to verifying the properties of guar gum as a viscofier and filtrate retainer as well as observing the impact of different quantities of guar gum and Carboxymethyl cellulose (CMC) in a standard sample of water based bentonite mud solution. This is in attempt to make a drilling fluid which contains half of the quantity of drilling mud used and yet is equally viscous to the standardised mud sample. Thus we can see that mud economics will be greatly affected by this approach. However guar gum is thermally stable till 60-65°C thus limited to be used in drilling shallow wells and for a wider thermal range, suitable chrome free additives are required.

Keywords : economics, guar gum, viscofier, CMC, thermal stability

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