

STABILIZATION AND FLUIDITY OF COAL-WATER SUSPENSION

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Keywords: coal-water suspension, fluidity, stability

Main Topic: Interfacial rheology

The surfactants, water soluble polymers and their compositions are widely used to control surface phenomena in disperse systems. Here, great importance has conformational control, and electrochemical surface-active properties of water soluble polymers.

In order to create new stabilizers thermodynamically unstable dispersed systems, in particular coal-water suspension with a coal concentration of 40% mass, we studied the rheological, stabilizing properties polyethylene glycol (PEG), sodium dodecyl sulfate and complexes thereof. It has been established that the use of stabilizers as sodium dodecyl sulfate and polyethylene glycol destabilize the system. Mass of precipitation for 45 minutes up 3500mg and 9000mg, respectively. This is 2.5 and 6.7 times higher than the original coal-water suspension where mass of sludge 1350mg. Introduction to the coal-water suspension complex SDS/PEG ~17.5 times (relative to SDS) and ~45 times (in the case of PEG) effectively stabilizes the dispersion.

Also, we have conducted research on the preparation and stabilization of 40% coal-water slurry, where the coal before it is pre-treated grinding diesel oil. Introduction of individual stabilizers in coal-water suspension particles which handled diesel oil yields minor changes in sedimentation and rheological characteristics. The addition complex PEG/SDS improves the stability of the dispersed systems ~ 15 times. When storing the coal water suspension for 24 hours system gradually shrank to form a loose sediments, highlighting the liquid phase contained in their structure. This is probably the result of coagulation particle rearrangement, which is obviously the number of contacts is increased, which leads to compression of coal water suspension and "squeezing" of which the dispersion medium. When applying mechanical action, i.e. with stirring happened restoration of the structure of suspensions, which is typical thixotropic systems. This phenomenon can be explained by the fact that to a certain extent, this coal-water suspension retains existed under its internal structure formation, i.e., has the property of "memory jelly".

Thus, it was established that pretreatment of coal by diesel oil (before grinding) and further stabilization of 40% coal-water slurry by scomplexes of PEG/ at concentrations of 0.8-1.0% helps to ensure a stable dispersion system. At that coal-water suspension resistance was observed during 24 hours.