
CHARACTERIZATION OF "WATER IN COAL TAR" EMULSIONS STABILIZED WITH PULVERIZED COAL MATTER

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Difficulties in dehydrating coal tar, especially those with a high degree of pyrolysis, are associated with the complex nature of numerous intermolecular interactions that provide high viscosity of the dispersion medium. On the other hand, emulsions are stabilized by dispersed particles insoluble in toluene and quinoline. However, the most distinctive feature is the stabilization of water droplets by the particles of the coke oven carry-over. First of all, the carry-over is related to the chamber loading process as well as the steam and hydro injection used. This leads to the absorption of the smallest dust particles by the condensing tar. The presence of functional groups in the coal substance gives hydrophilicity to the generally hydrophobic conventional coal molecule. In addition, the mineral part of coal also contributes to the diffusivity of the substance, which makes it surface active and capable of stabilizing emulsions. It has been shown that such particles are capable of forming stable multiple emulsions, which, as is known from the experience of oil dehydration, are very stable. The formation of emulsions was carried out on a mechanical stirrer, samples of crushed coking coal were used as emulsifiers, clay and sand were taken as a hydrophilic standard, and industrial soot was used as a hydrophobic standard. The maximum volume of the emulsion was obtained when "Zh" coal and "OS" coal were used as a powder emulsifier. The minimum volume of the emulsion was formed when hydrophilic components, such as sand and clay, were introduced into the system. The formation of multiple emulsions of the "tar in water/water in tar" type was noted. With an increase in the degree of hydrophobicity of powdered emulsifiers, the droplet size decreases, the interfacial surface increases, and the emulsion becomes more stable. The emulsifying ability of powders is explained by the formation of a structural and mechanical barrier.

Keywords: coal tar, quinoline-insoluble substances, coal substance, stabilizers, hydrophilicity, hydrophobicity, multiple emulsions.

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