

---

## EVALUATION OF THE POLARITY OF COAL TAR EMULSION STABILIZERS

© **L.P. Bannikov**, PhD in Technical Sciences (State Enterprise "Ukrainian State Scientific Research Institute of Coal Chemistry (UKHIN), 7 Vesnina str., Kharkiv, 61023, Ukraine)

*Surface properties of emulsion stabilizers based on coal tar are determined by their polarity. Particles of coal matter and solid dispersed substances insoluble in quinoline are considered as stabilizers of emulsions of "water in tar" type. Polarity significantly affects the physicochemical properties of tars, to take into account the degree of hydrophobicity of coal tar, information about the dipole moment of the conditional molecules is necessary. In addition, the value of the dipole moment of coal particles that stabilize the emulsion "water in tar" is of interest. The existing methods for calculating the dipole moment of coal take into account the degree of carbonization of the substance, which does not allow to trace the contribution of the degree of metamorphism and the presence of heteroatoms separately. By regression processing of the data array of dipole moment values of individual aromatic compounds, the dependence on the elemental composition was obtained. The obtained dependence in character and absolute values well characterizes the correlation of the dipole moment of coal with the degree of carbonization. The obtained data make it possible to classify substances insoluble in quinoline as a dispersed component of coal tar with the highest polarity. The greatest surface activity is possessed by those substances that have polar and non-polar groups. Such substances have surface-active properties and act as stabilizers of emulsions "water in tar". Experimentally established a closer exponential relationship between the humidity of the tar and the content of substances insoluble in quinoline. An important role in the stabilization of water particles in the emulsion is played by the concentration of quinoline-insoluble substances in the tar. Its increase may be accompanied by aggregation of quinoline-insoluble particles. Together with the increased viscosity of the dispersion medium, coal tar with a high degree of pyrolysis is quite resistant to separation.*

Keywords: dipole moment, polarity, regression equation, quinoline insoluble substances, highly pyrolyzed tar.

Corresponding author Bannikov Leonid P., e-mail: [ukhinbannikov@gmail.com](mailto:ukhinbannikov@gmail.com)

---