
COMPATIBILITY OF COAL TAR DERIVATIVES WHEN COMPOUNDED WITH INDUSTRIAL WASTE PYROLYSIS PRODUCTS

© **K.O. Doroshenko, V.V. Bagrova** (State Enterprise “Ukrainian State Research Institute for Carbochemistry (UKHIN)”, 7 Vesnina str., Kharkiv, 61023, Ukraine), **V.V. Savchenko, T.M. Kedun** (National Technical University "Kharkiv Polytechnic Institute", 2, Kyrpychova str., Kharkiv, 61002, Ukraine)

The article shows that ensuring energy security requires an integrated approach, including the search for and implementation of new sources of boiler fuel. Coke production and pyrolysis of coal coking by-products are among the promising areas that can balance the requirements of energy efficiency and environmental sustainability and can play a key role in ensuring a sustainable energy future for Ukraine.

It has been demonstrated that intermediate products obtained in the process of coke production represent a promising source of furnace fuel. The development of new formulations allows not only to increase energy efficiency but also to reduce the negative impact on the environment. The pyrolysis of secondary resources opens up opportunities for expanding energy sources, which is becoming a key aspect of ensuring the energy security of the state.

Relevant studies are highlighted. A sample of coal tar, which is not used for the production of electrode pitch grades in coke production, and pyrolysis liquid formed in the process of recycling rubber car tyres were taken for their analysis. The compatibility of these materials was assessed based on the presence or absence of sediment at the bottom of the container after thermostating. The results showed that the compatibility of pyrolysis fluid and coal tar is quite low, with the maximum co-dissolution observed when mixing 20 % pyrolysis tar and 80 % coal tar. The flocculation coefficient was determined to be 0.7 units. This characterises the system as more prone to sedimentation. The inapplicability of the formula for calculating oil incompatibility (API MPMS 12.3) indicates a different mechanism of solvation of coal and pyrolysis resins than that of petroleum materials.

Keywords: coal tar, boiler fuel, quinoline insoluble substances, pyrolysis liquid, compatibility, solvation.

Corresponding author T.M. Kedun, e-mail: tatanakedun07@gmail.com
