

NEW INSULATING HYDROCARBON MATERIALS FOR PROTECTION OIL AND GAS PIPELINES FROM CORROSION

© **A.Y. Gaipov, A.B. Grigorov**, Doctor of Technical Sciences (National Technical University "Kharkiv Polytechnic Institute", 2, Kyrpychova str., Kharkiv, 61002, Ukraine)

The article provides an overview of sources devoted to the issue of passive corrosion protection of gas and oil pipelines by applying coatings represented by insulating hydrocarbon materials (IHM) to their surface. Basic requirements for their properties are formulated, compliance with which guarantees effective protection of the metal surface of the pipes, which contributes to ensuring their reliability during operation. The effectiveness of application and the main shortcomings of each of the IHMs, which are currently quite widely used in the industry of Ukraine, are analyzed. Based on this, the main direction of scientific research related to the creation of new composites, which will be characterized by a high level of operational properties, low cost, and their actual production, will contribute to the improvement of the ecological situation in the country, has been chosen. Such results can be achieved by using secondary raw materials – production and consumption waste – as raw materials for the technological process of the production of IHM. A universal formula of insulating hydrocarbon materials is proposed, which includes a hydrocarbon base, a modifier of this base, and an activating substance. In view of this, the following were chosen as the most promising components of IHM from among the secondary raw materials: for the hydrocarbon base – spent petroleum products, oil sludge, acid tars, tar-asphaltenic substances, substandard products of oil refining and coke chemical production; for modifiers – polymers, cellulose, rubber, hydrocarbon solvents; for activating substances – salts of higher primary, secondary and tertiary aliphatic amines, amidoamines, tetrasubstituted ammonium bases, higher carboxylic acids, salts (soaps) of heavy and alkaline earth metals of higher carboxylic acids. According to the IHM formula, an algorithm for determining and selecting raw materials is presented, which allows implementing a systematic approach to the development of new highly effective types of materials for the protection of gas and oil pipelines.

Keywords: pipelines, corrosion, insulating hydrocarbon materials, protective coatings, secondary raw materials, petroleum products, coal pitch, polymers, rubber crumb, tar-asphaltic substances.

Corresponding author A.B. Grigorov, e-mail: grigorovandrey@ukr.net
