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

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The article presents a review of sources on the issue of passive corrosion protection of gas and oil pipelines by applying coatings represented by insulating hydrocarbon materials (IHM) to their surface. The basic requirements for their properties are formulated, compliance with which guarantees effective protection of the metal surface of pipes, which contributes to ensuring their reliability during operation. The efficiency of application and the main disadvantages of each of the IHMs, which are currently widely used in the Ukrainian industry, are analysed. On this basis, the main direction of scientific research related to the creation of new IHMs, which will be characterised by a high level of operational properties, low cost, and their production will contribute to improving the environmental situation in the country, has been chosen. Such results can be achieved by using secondary raw materials, such as industrial and consumption wastes, as raw materials for the technological process of IHM production. A universal formula of insulating hydrocarbon materials is proposed, which includes a hydrocarbon base, a modifier of this base and an activating agent. In view of this, the most promising components of the IHM from among the secondary raw materials are for the hydrocarbon base – waste oil products, oil sludge, sour tar, tar and asphalt substances, substandard products of oil refining and coke production; for modifiers – polymers, cellulose, rubber, hydrocarbon solvents; for activating agents – salts of higher primary, secondary and tertiary aliphatic amines, amido amines, four-substituted ammonium bases, higher carboxylic acids, salts (soaps) of heavy and alkaline earth metals of higher carboxylic acids. According to the formula of the IHM, an algorithm for determining and selecting raw materials is presented, which allows implementing a systematic approach to the development of new high-performance materials for the protection of gas and oil pipelines.

Keywords: pipelines, corrosion, insulating hydrocarbon materials, protective coatings, secondary raw materials, oil products, coal pitch, polymers, rubber crumb, resinous asphalt substances.

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