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ASSESSMENT OF INHIBITIVE PROPERTY OF SULFUR AS A FILLER OF POLYMER MATERIALS WITH A VIEW TO REDUCE TECHNOGENIC IMPACT ON ECOLOGY

Abstract. According to modern representations bitumen polymer compositions (BPC) are dispersions of polymers with bitumens. The important stage of creation of durable insulating materials is their inhibition in consequence of oxidation processes in conditions of their application. In this connection the most acceptable substance is sulfur-containing compounds, which effectively performs this role. Currently sulfur production is sharply marked from the number of other extractive industries that from the ecological point of view the most important problem is not achievement of sustained development condition by the sulfur production, but solution of problems of safe storage or even disposal of extracted sulfur. As against other extractive industries, which main efforts are focused on the search of more effective methods of production of required component against its decreasing world reserves, leading companies in sulfur industries worried first of all by the search of new ways for safe management by extracted by them resource.

Keywords: oil dispersed systems (ODS), film-forming substances, petro chemistry, thermoplastic resins (TPR), sulfur, pigments, physical-mechanical, insulating properties of coatings.

Introduction. According to modern representations bitumen polymer compositions (BPC) are solution of polymer in bitumen. On this basis, large, branched polymer molecules, equally distributing along the mass of bitumen, as if reinforce it, give bitumen elasticity and resilience, as well as thermal resistance, which appear only at some optimal amount of polymer molecules, apparently when their concentration forms continuous net structure.

Preparation of the film-former [1-3], i.e. combination of special bitumen with components was carried out in two stages: a) preparation of polymer solution consisting of thermal polymer resins (TPR) sample, polymer plasticizer and aromatic solvent (o-xylene); b) combination of polymer solution with sample of special bitumen.

Research methods. Bitumen-insulating materials (BIM) were prepared for evaluation of protective properties of such polymers as divinyl-styrene thermoplastic elastomers (DSTE), low molecular sevilenes (LMS), polycyclopentadienes (PCPD), atactic polypropylenes (APP) [4]. It should be noted that the polymers were introduced in amount from 2 to 6 mass percent, after their distribution in the solvent they were applied to the substrates. Electrochemical studies, given in Table 1, were carried out on the fifth day.

Data of Table 1 show that LMS and DSTE polymers with critical concentration of structuring (CCS) 2 and 2-2,5 mass percent respectively have the most effective inhibiting characteristics. Special attention should be paid to the protective barrier that occurs when introducing 8 mass percent TPR, namely at 5 and 7 hour exposure in the electrolyte solution, when passivation of the substrate surface, isolated by bitumen-polymer film-former, occurs.