

type of modification, the ion exchange by Ag^+ turned out to form more efficient sorbent material than reduced silver nanoparticles. Sorption capacity highly depends also on structure of sorbate molecule, DBT is more likely adsorbed in every case. Modification by SNP and SI makes NaP1-C material competitive in relation to other novel sorbents in liquid fuel desulfurization field.

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THE WAY OF NEUTRALIZATION OF OIL CHEMISTRY AND THERMAL POWER WASTE BY UTILIZATION THEM IN PRODUCTION OF BITUMINOUS MATERIALS

Introduction. There are a lot of technological processes in oil chemistry, which give hard-recycling sulfuric waste products. These waste products are heterogeneous systems. One of the most common sulfuric waste products is acid tar, which are form in the processes of sulfonation of oil distillates (production of sulfonate additives), sulfonation of individual hydrocarbons and petroleum fractions in production of detergents, alkylation (when sulfuric acid is used as catalyst) [1]. Despite the reduction of using sulfuric acid for cleaning oils and paraffins, the amount of sulfuric acid waste in the dumps is very significant. Acid tar, being a waste of the second hazard class, is a serious environmental problem. Acid tar accumulates in dumps, where over time the acid is washing out by the rainfall and sulfur oxides are release, which is results water and air pollution.

During preliminary water purification at the CHP huge amount of waste accumulates. This waste consists mainly of calcium and magnesium carbonates, doesn't contain highly toxic substances [2]. However, with their long storage in dumps, there is a threat of increase the mineralization of groundwater in near area and deterioration of the hydrochemical environment of waters. Moreover, large areas of agricultural land are alienated for the creation of landfills [3, 4].

At the same time, both acid tar and waste from chemical water treatment of thermal power plants are a valuable secondary material resource for producing marketable products. The constant need for such petroleum products as bituminous materials with a relatively high cost makes it necessary to search for new ways of obtaining them, including using production waste, which will significantly reduce the cost of the final product while maintaining its quality characteristics at the level of modern analogues, which determines the relevance research in this direction.

Materials and methods. Treatment of acid tar was made as follows: acid tar was heated to temperatures 80, 90, 100, 110 °C and mixed with a neutralizing agent – water treatment waste

of CHP. The neutralizing agent was added at concentrations of 10, 15 and 20 % mass. for acid tar. After keeping the samples for 24 hours, the acid number, total acidity and softening temperature were determined. At the second stage of the research, the task was to get roofing bitumen mastics based on the products of neutralization of acid tar with waste of chemical water treatment from a CHP. For the obtained bituminous mastics with 15% mass. product of neutralization according to GOST 2889 are determined: heat resistance for 5 hours; softening temperature according to the "Ring and ball" method; flexibility on the rod at a temperature of (18 ± 2) °C; water content and fragility temperature.

Results. In the course of the research, the following was established: the optimum temperature for the process of neutralizing acid tar from the production of sulfonate additives with waste is 110 °C; chemical water treatment waste is an effective neutralizing agent; at concentrations of the neutralizing agent more than 15% of the mass. the heat resistance of the neutralization product increases by 10 ... 15 °C. It has been experimentally confirmed that an expedient direction for the neutralization and recycling of acid tar and waste of chemical water treatment from a CHP is to obtain hot bituminous roofing mastics on the basis of neutralization products, the quality indicators of bituminous materials are not inferior in terms of operational properties to industrial analogs.

Conclusion. The proposed method for utilization of oil chemistry and thermal power waste will reduce adverse impact on the environment, expand the base of raw materials for the production of bituminous materials through the use of production waste and reduce the cost of the process of obtaining marketable products.

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MODIFICATION OF THE STRUCTURE OF SAND AND CEMENT MORTARS BY THE ENERGY OF ELECTROMAGNETIC RADIATION OF THE MICROWAVE RANGE TO IMPROVE THE RELIABILITY OF OPERATION OF OIL AND GAS INDUSTRY FACILITIES

The durability of the cement-based construction materials used can be increased by modifying them with electromagnetic radiation. In particular, the modification of the structure of aqueous solutions and building mixtures used at various facilities in the oil and gas industry, in particular, for cementing wells, can be performed by exposure to magnetic and microwave electromagnetic radiation (UHF EMP). At the same time, an improvement in their physical and mechanical properties is noted.

Thus, an increase in the number of crystallization centers is noted during the structure formation of compositions in industrial water (as well as in a mixed solution mixture), which has