MODERN MEDICINE AND PRACTICE
https://inovatus.es/index.php/ejmmp
EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE
Vol. 3 No. 12 (Dec - 2023) EJMMP ISSN: 2795-921X

PROCUREMENT OF SORBENTS WITH HIGH SORPTION PROPERTIES AND WASTEWATER TREATMENT ON THEIR BASIS

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Abstract: The sorbent properties of recycled palygorskite powder and clay powder mixtures were studied. The effect of temperature and time on the extraction process of the sorbent was studied. During processing, composites were obtained by adding additional wood to increase the sorbent property. A new efficient extraction method was proposed.

Key words: Clay powders, bentonite, palygorskite powder, composite, adsorbent, wood, sulfuric acid, activated carbon.

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The conducted experiments are based on the technology of production of sorbents, which mainly creates a scientific basis for the production of sorbents with high sorption properties, which can be used for wastewater treatment by enterprises. Wastewater treatment of enterprises is one of the necessary processes in industrial production. If such treatment is carried out, it leads to the removal of unnecessary harmful substances. Wastewater is carried out using substances that can be absorbed on the surface. After wastewater treatment with sorbents, it has a lighter color and can be almost colorless under certain conditions. The sorbents used in wastewater treatment must meet the following requirements: the sorbent, as much as possible, must have the ability to absorb various impurities on its surface. However, given that sorbents are selective, the task is to choose them depending on the type of compounds. In our case, the use of soils such as phloredins, as well as activated carbon, as sorbents for wastewater treatment is widely used. Sorbents must have high activity, that is, the less amount of sorbent used per unit of wastewater to achieve the required level of purification, the higher its activity level. This indicator is important, because the sorbent absorbs some of the harmful substances in the wastewater, and the purification index of organic and inorganic minerals in the coagulated wastewater reaches 30-35% before the coagulation stage. Sorbent should not have properties such as various chemical changes - polymerization, decomposition, and oxidation, sorbent should have chemical inertness. Sorbent must be deodorized as a result of complete absorption of foreign odors in wastewater. The sorbent should be easily separated from the sorbed components, that is, the desorption process should proceed easily. In this article, we provide information on the production of sorbents obtained from clay powders and used for wastewater treatment. The goal of obtaining sorbents is to develop a method of obtaining wastewater purifiers with high yield, low cost, and high adsorption activity. Clay powder from the Navbahor, i.e. bentonite clay in a ratio of 3:7, is ground to 10-20 mm, 1% of the weight of the clay is added with crushed wood chips and a suspension is prepared in water. Mineral acid (for example, sulfuric acid) is introduced in the amount of 25-28% by weight of the dry clay obtained for activation. The acid concentration in the activator should be between 10-12%. The activation process is carried out with vigorous stirring for 1-1.5 hours at room temperature of 25-30°C, the

resulting mass is washed with cold water to pH 2.6-2.8 and dried, then sieved through a 0.1 mm sieve. It is filtered and then dried until the moisture content reaches 12-14%. In a hammer or ball mill, the passage of the sorbent through the 0044K sieve (fraction 44 μm) is brought to a state where it is at least 95%. As a sieve for filtering the working pulp, it is preferable to use polyester fiber materials that are resistant to decomposition when interacting with acids. The main features of the proposed method have the following advantages compared to the used method: The adsorption activity of the sorbent obtained by this method increases when it is used in wastewater treatment of all types of enterprises. The obtained results show that the sorption property of the sorbent obtained by the proposed method, compared to the sorbent obtained by the current method, increases by 12-17%. Comparative studies were conducted between the proposed method and the existing method. Bentonite clay from two mining sites was used as the main raw material.Thus, the obtained data show that the proposed method is justified by the higher efficiency of the labor costs and the yield of the final product and its adsorption activity compared to the existing method.

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