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Influence Of The Composition And Content Of Clayy Minerals On The Cleaning Ability Of Soap-Like Substances

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Abstract – The article discusses the use of industrial waste of fat and oil production in the production of technical washing, foaming and emulsifying capabilities of Navbahar alkaline bentonite (NSHB), Georgian asconite-bentonite (GAB) and enriched Angren kaolin (UAC). It was found that the best foaming ability was observed in HAB. The best emulsifying ability is observed in UAC, then in NSPB and GAB. Therefore, to obtain the best abrasive detergents, it is advisable to use waste Angren kaolin.

Keywords – Adsorbents, Foaming Ability, Detergency, Clay Minerals, Emulsifying Ability, Surfactant Properties.

Modern environmental requirements for industrial enterprises provide for the reduction of solid waste from their disposal in city landfills. At the same time, special attention is paid to such waste, which can be disposed of and used as secondary raw materials in the production of necessary substances. Waste greasy clays are among such substances. At present, clay adsorbents obtained on the basis of local bentonites and kaolin are mainly used at the fat-and-oil enterprises of Uzbekistan. Which are thrown away after use during bleaching. However, the valuable components of their composition make it possible to use them for other purposes, because technical detergents.

In practice, the main indicator of soaps, pastes, powders, etc. is their washing ability, which is determined by a known method.In this case, a 1% aqueous solution is prepared and with its help a certain amount of material (fabrics, ceramics, etc.) is washed. At the same time, the foaming capacity of the solution in mm is also measured, which has certain limitations both from the point of view of the operation of soap machines and sanitary and hygienic conditions in soap production. In the diagrams shown in Fig. 1 shows the achieved values of washing and foaming capacities of 1% aqueous solutions prepared using selected clay minerals NShchB, OAK and GAB.

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From Fig.1. It can be seen that as the best washing ability of a 1% aqueous solution is observed when using enriched Angren kaolin (OAK) within 210% and vice versa, the lowest when using Georgian ascanite-bentonite (GAB) within 160%. An intermediate position between the selected clays is occupied by Navbaharsky alkaline bentonite (NPB), which is 180%.

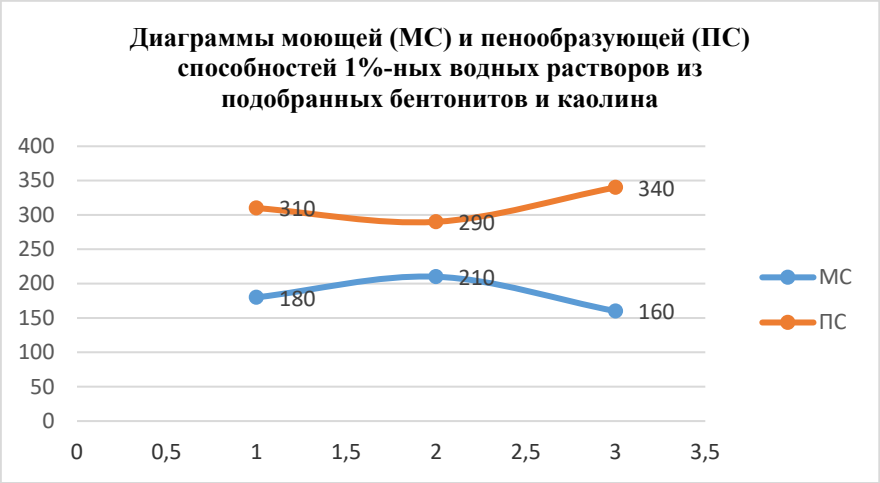

Fig. 1. Diagrams of washing (MS) and foaming (PS) capacities of 1% - them aqueous solutions from selected bentonites and kaolin

As mentioned earlier, the foaming ability of selected clay minerals is also considered a necessary indicator of the obtained detergents. Figure 1 shows that the highest foaming capacity (340 mm) is observed when using Georgian ascanite-bentonite (GAB) in the form of a 1% aqueous solution, for NSHB it is 310 mm, and for OAK-290 mm. {{1 }} From Fig.1. It should be concluded that the resulting detergents, depending on the type of clay minerals used (NSCHB, UAC and GAB), can have highly decomposing colloidal-chemical indicators, which should be taken into account when determining the area of their application.

It should be noted that the selected clay minerals, i. E. waste adsorbents have surface-active properties, which are reflected in their emulsifying ability. We have studied the emulsifying ability and surface tension of 1% - their aqueous solutions obtained from NSHB, UAC and GAB.

The results obtained in the form of diagrams are presented in Fig. 2.

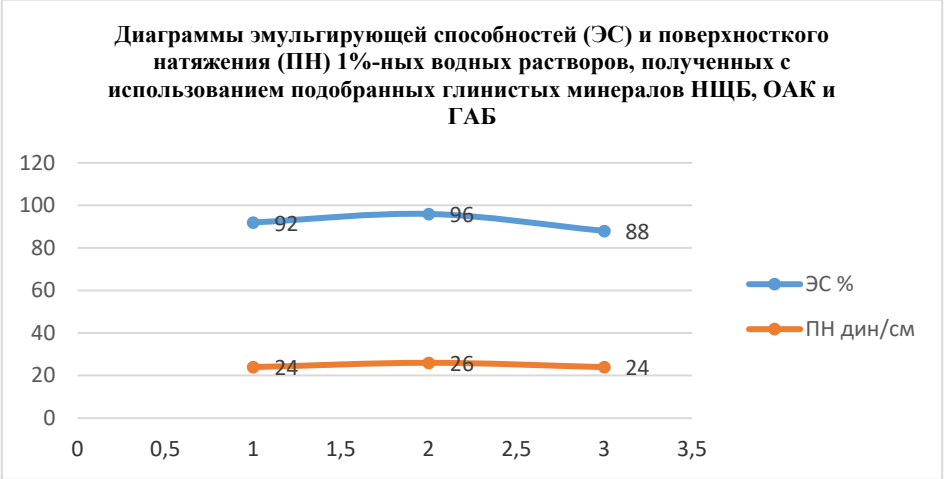

Fig.2. Diagrams of emulsifying ability (ES) and surface tension (ST) of 1% aqueous solutions obtained using selected clay minerals NShB, OAK and GAB

From Fig.2. it can be seen that the greatest emulsifying ability of a 1% aqueous solution is observed when using OAC, then, NSHB and GAB. In this case, the highest surface tension of a 1% aqueous solution is observed when using OAC further, NSHB and GAB.

This can be explained by the fact that UAC, in terms of its chemical composition and adsorption capacity, is a good chemical mineral for obtaining abrasive detergents for cleaning ceramic products (bathrooms, tiles, etc.).

Thus The studies carried out allow us to draw the following conclusions: - The nature of clay minerals (bentonite, kaolin, etc.) affects the washing and foaming properties of the resulting detergents; - Emulsifying ability has a maximum value when using UAC when receiving a 1% aqueous solution; - Of the selected clay minerals, it is advisable to use enriched Angren kaolin, which is 5 times richer in Al2O3 than NSPB; - To obtain the best abrasive detergents (from bentonite, kaolin, etc.), it is advisable to use waste Angren kaolin (UAC), which, in terms of its structural and chemical properties, can increase the detergent and other capabilities of the resulting agents.

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