PHYSICO-CHEMICAL INDEX OF A PASTE-LIKE DETERGENT

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Abstract: *This article shows the possibilities of obtaining paste-like detergents based on secondary resources and waste of fat-and-oil production. The basic physico-chemical properties of the obtained detergents have been studied.*

It has been established that the use of wastewater formed during the hydration process containing phospholipids, triacylglycerides and polysilicon acids with surface-active and emulsifying properties will positively affect the washing and cleaning abilities.

Keywords: *detergents, wastewater, surface, cleaning properties, pollution, pH, foaming, foam stability.*

Today, strict requirements are set for alkaline detergents that remove dirt from surfaces. When using such detergents in the process of removing complex fatty impurities, it should wet the surface well, emulsify fats, dissolve, solubilize, disperse and stabilize impurities, if possible, hydrolyze the protein component. To fully carry out these processes, it is possible only with the help of multicomponent compositions containing surfactants (surfactants) and auxiliary components [1].

The presence of a significant amount of accompanying substances in PCWW, of which phospholipids, salts of fatty acids, and polysilicic acids have surface-active and emulsifying properties, causes the formation of a complex adsorption layer stabilized by the indicated surfactants on the interface with alkali, in the formation of which triacylglycerols, waxes, and wax-like substances participate. The latter is explained as follows. Taking into account that the association occurs at the acidic polar groups of associates located on the interfacial surface, hydrophobic properties predominate in their total hydrophilic-lipophilic balance. This contributes to a significant increase in both the solubilization of neutral fat and its conjugated solubility, which is understood as the inclusion of lipophilic molecules (triacylglycerols, waxes, and wax-like substances) between the hydrophobic parts of the molecules that form soap micelles [2].

Further, the colloid-chemical properties of the obtained ointment-like and paste-like detergents were studied.

The foaming ability of detergents is one of the main factors determining the technological properties. The evaluation of these properties is based on the study of colloid-chemical factors of stabilization and destruction of the foam.

The aggregative instability of the foam understands the ability to maintain the volume and the initial degree of dispersion.

Researching the foaming properties of the soap base, one of the most versatile and standardized methods for assessing foam formation and foam stability - the method of D. Ross and G. Miles [3].

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The method is based on whipping the foam with a free-falling jet of solution. Determine the initial foam height, H0, and the foam height after 5 minutes, H5. The stability of the foam is judged by the ratio H_0/H_5.

The versatility of the method lies in the fact that the test can be carried out at any given concentration and controlled temperature, in the water of different hardness, and the presence of various contaminants.

During the experiments, water with a hardness of 7 mmol equiv/l was used, while the temperature and concentration of the soap base were varied.

The volume of the initial foam was studied at different detergent concentrations and temperatures. The results are shown in Fig.1. As a comparative detergent, ointment-like detergents Cif produced in Turkey were taken.

The stability of the foam of the detergents obtained by us is probably due to high-molecular surfactants in its composition, which act as a stabilizer due to the formation of highly viscous mechanically lasting adsorption layers that diffuse into the depth of the solution. These layers slow down the flow of liquid in the film. On the other hand, they give the foam film a high structural viscosity and mechanical strength.

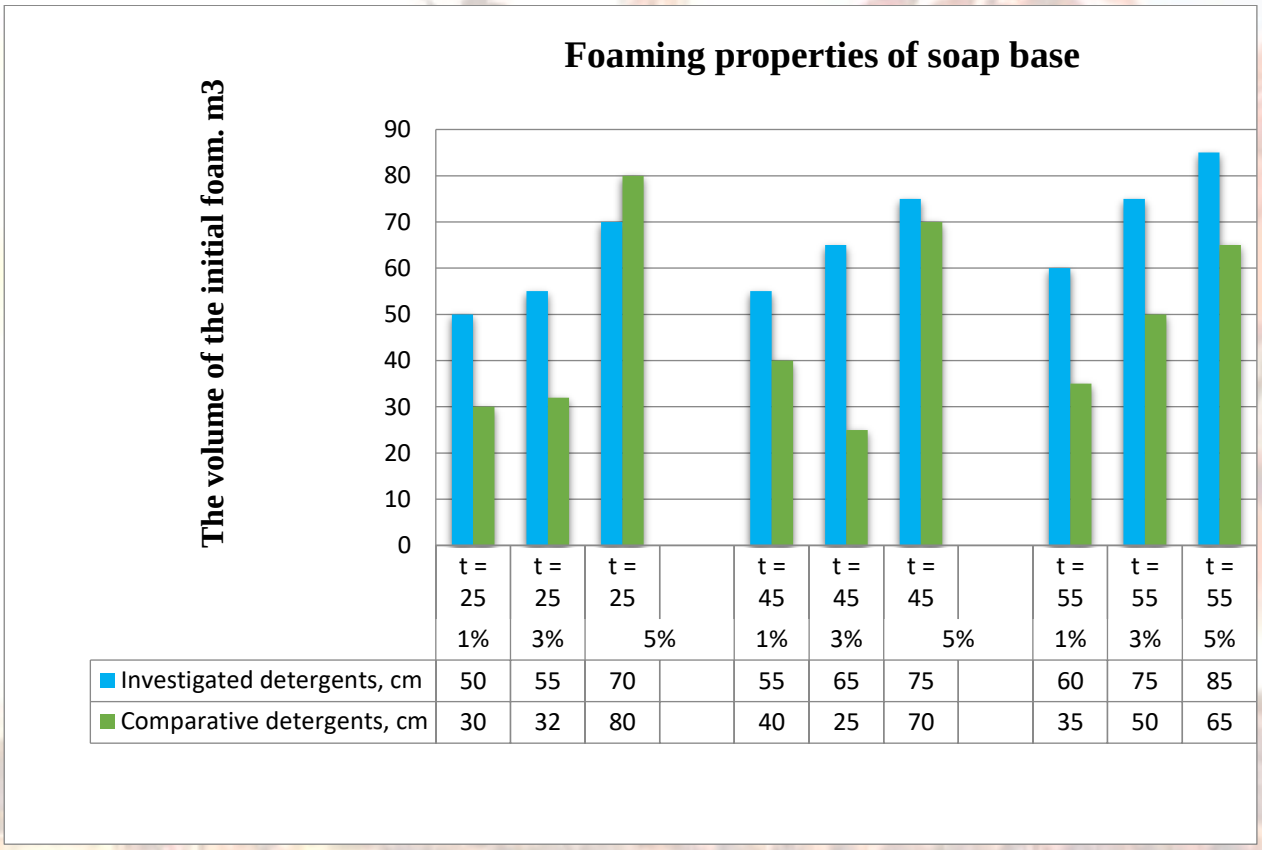

Figure 1 - Foaming properties of a soap base, characterized by the volume of the initial foam of aqueous solutions with a mass fraction of a soap base:

eleven%; 2-3%; 3 - 5%

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Figure 2 shows the results of studies of foam stability over time. As the results show, with increasing temperature, the steadiness of the foam increases, however, in the control sample, the stability of the foam is very low.

Thus, the studies have shown the possibility of using waste clay and PCWW in the production of detergents, where the role of waste clay will be as an abrasive, and PCWW as an emulsifier-stabilizer. It has been determined that the cleaning properties are also not inferior to imported analogs.

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