OBTAINING SURFACE-ACTIVE SUBSTANCES FROM USED CLAYS OF OIL-AND-FAT PRODUCTION

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Annotation: This article presents the results of analyzes of waste fatty clays of some oil and fat enterprises in Uzbekistan and the ways of their use by obtaining abrasive soap-like surfactants.

Keywords: Vegetable oils, activated carbons, clays, bleaching, adsorbents, soap-like surfactants.

Introduction

At the present stage of development of the fat-and-oil industry in Uzbekistan, the main attention is paid to the development of innovative environmentally friendly waste-free technologies, in particular for the production of soaps, detergents in, etc. Surfactant. [1,2].

In the processes of refining cotton and soybean oils, activated carbons and clay adsorbents are used, which are imported at an “expensive price” from European countries, India, China, etc. These costs also increase by 1.3-1.5 times due to expensive transport and customs costs, which greatly overestimate the production cost of bleached vegetable oils. It is known that at present the main method of adsorption purification and bleaching of vegetable oils used in industry is the contact method, where activated adsorbents are used in the form of fine powders and are separated from clarified vegetable oils by filtration on frame filter presses. [3].

Main part

Waste adsorbents are collected in large containers and periodically taken to the city landfill for disposal, which, according to environmental requirements, is a violation, due to which the enterprise annually pays significant amounts of fines from the income of enterprises. Not knowing the composition of adsorbed substances in the pores, waste coal and clay minerals contributed to the irreversible loss of neutral oils and fats, fatty acids, phospholipids, etc. related substances. Regeneration of spent adsorbents by known methods is considered economically unprofitable and, therefore, is practically not used in any enterprise. Although there are ways of rational use of waste fatty adsorbents in the production of surfactants, in particular, in the production of special technical and household soaps containing highly dispersed coal or clay powders.

To solve this problem, we analyzed selected samples of waste fatty clays in accordance with the current standard. [4].These samples of waste fatty clays were obtained from JSC "Fergana yog’-moy", "Andijon yog’-moy" and "Uchko’rgon yog’-extraction", where cotton and soybean oils are mainly bleached.

Table 1 shows the results of analyzes of local waste fatty clays.

Table 1.

Chemical composition of local waste fatty clays

Images of waste fatty clays	Oil content,%	Content in oil,%		
		phospholipids	gossypol	unsaponifiables
JSC “ Fergana yog’-moy”	55-58	2,1-2,5	2,3-2,5	2,0-2,2

JSC “Andijon yog’-moy ”	53-55	2,0-2,4	2,4-2,6	2,1-2,4
JSC Uchko’rgon yog’-extraction"	52-56	2,2-2,6	2,3-2,4	2,2-2,5

Table 1 shows that all samples of waste fatty clays contain more than 52% of adsorbed valuable oil. The extraction of the latter by the method of extraction with a hydrocarbon solvent followed by its distillation made it possible to determine the content of substances accompanying the adsorption oil. In particular, it was revealed that phospholipids contain more than 2.0%, gossypol 2.3%, and non-saponifiable substances not more than 2.5% by weight of the oil. For the production of surfactants for technical purposes, these substances play a positive role. For example, phospholipids and gossypol, interacting with alkali, form surfactants with a high emulsifying ability, which is very important in the production of soaps for various purposes.

substitutes for imported clay powders. This is beneficial for oil and fat enterprises both from the point of view of saving resources and environmental safety, obtained soap-like surfactants for technical purposes.

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