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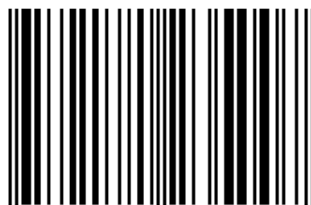
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EFFICIENT USE OF SECONDARY RESOURCES IN THE OIL INDUSTRY

Abstrakt: *In this article, clay minerals increase the washing properties of soap and reduce their foaming properties, which is necessary for obtaining abrasive soap-like substances for cleaning metals, ceramics, etc.*

Key words: *clay minerals, betonies', kaolin's and others, adsorbents, soap-like substances, surfactants, waste adsorbents.*

ЎФ МОЙ САНОАТИ ИККИЛАМЧИ РЕСУРСЛАРДАН САМАРАЛИ ФОЙДАЛАНИШ

**Кадирова Нафиса Баннобовна
Хамракулова Муборак Хакимовна**
Фаргона политехника институту

Annotasiya: *Ushbu maqolada metall, keramika va boshqalarni tozalash uchun abraziv sovunga o'xshash moddalarni olish uchun zarur bulgan gil minerallari sovunning yuvish qobiliyatini oshirishi va ularning ko'pik xususiyatlarini kamaytirishi ko'rilgan.*

Kalit so'zlar: *gilli minerallar, bentonitlar, kaolinlar va boshqalar, adsorbentlar, sovunsimon moddalar, sirt faol moddalar, sarflangan adsorbentlar.*

ЭФФЕКТИВНОЕ ИСПОЛЬЗОВАНИЕ ВТОРИЧНЫХ РЕСУРСОВ В МАСЛЯНОЙ ПРОМЫШЛЕННОСТИ





Кадирова Нафиса Баннобовна
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Аннотация: В этой статье рассматриваются свойства глинистых минералов, которые увеличивают моющую способность мыла и снижают их пенообразующие свойства, что необходимо для получения абразивных мылообразных веществ для очистки металлов, керамики и других.

Ключевые слова: глинистые минералы, бентониты, каолины и др., Адсорбенты, мыльные вещества, ПАВ, отработанные адсорбенты.

Introduction

The problem of efficient recycling of secondary resources to obtain a competitive product is relevant for all industrialized countries. However, despite the importance and economic feasibility of the most complete recycling of secondary resources, the level of their use is currently insufficient and optimal.

Given the potential of oil companies in Uzbekistan, the issue of recycling secondary resources to create local competitive products based on dispersed oil waste is important [1, 2]. At the same time, it is necessary to comprehensively assess all the economic factors of industrial processing, the main raw materials and secondary resources derived from them.

Today, more than 30 large oil and fat enterprises are successfully operating in the country, which produce an average of more than 600.0 thousand tons of refined vegetable oils (cotton, soybeans, sunflower, rapeseed, etc.) per year. The processing of the obtained vegetable oils, i.e. the bleaching process, has been using various adsorbents. This type of activated carbon and soil adsorbents are imported from European countries, India, China and other foreign countries at a high price. These costs are also increasing 1.3-1.5 times due to expensive transportation and customs costs, which significantly increase the cost of production of bleached vegetable oils.

First of all, such oils are characterized by an increase in difficult hydrated phospholipids and non-saponifiable substances containing hydrocarbons, waxes, carotenoids, sterols, steroids, alcohols, tocopherols, and others. It is known that the main method of purification and bleaching of vegetable oils currently used in industry is the contact method, where the active adsorbents are applied in the form of fine powder and the purified vegetable oils are separated by filtration in frame filter presses [3].

Used adsorbents are collected in large containers and periodically taken to the municipal waste disposal site, which is a violation of environmental requirements, so oil companies pay large fines every year from enterprise revenues. Not knowing the content of adsorbed substances in the pores of used coal and clay soils leads to irreversible loss of neutral fats, fatty acids, phospholipids and others. Recycling of used adsorbents by certain methods is economically unprofitable and therefore regeneration is not used in almost any plant. There are methods of judicious use of oily adsorbents used in the production of surfactants, especially those used in the manufacture of special technical and household soaps containing high-dispersion coal or soil powder [4].





Discussions and results

Thus, the aim of this work is to develop a technology for the production of detergents based on the secondary resources of the oil and grease industry.

The purpose of applying the used bleach soil mixture to specially designed detergents is to thoroughly and easily clean the metal surfaces. The mixture contains carotenoids, tocopherols, unsaturated fatty acids, phospholipids.

The fatty acid content of the processed bleaching soil obtained as a result of adsorption refining of some oils is given in the table below.

1- table. The fatty acid content of the processed bleaching soil

Name of fatty acids	The amount of fatty acids in the oil phase of the refined oil %			
	Sunflower	Soy	Raps	Oats
C 16:0	3,0	6,5	2,5	4,5
C18:0	8,0	5,0	4,0	10,0
C 18:1	24,5	21,5	61,5	32,0
C18:2	63,5	54,0	21,0	52,0
C18:3	0,5	8,0	10,0	1,0
C20:1	0,5	2,0	1,0	0,5
C 22:1	-	3,0	-	-
The amount of saturated fatty acids	11,0	11,5	6,5	14,5
The amount of unsaturated fatty acids	89,0	88,5	93,5	85,5
The amount of semi-saturated fatty acids	64,0	62,0	31,0	53,0

The biological effectiveness of sunflower, soybean, rapeseed and oat oils is that they contain essential fatty acids, especially lenolic acid (S18: 2).

Analyzes show that processed bleached soil is a product enriched with biologically active substances and lipids. Tocopherol (vitamin E) - 40-86 mg%. It absorbs more tocaferol when processed with Asconite in the cleansing of soybean oil.

The chemical composition and characteristics of the treated bleached soil after refining were studied. From the results obtained we can conclude the following. This means that recycled bleached soil is a product enriched with biologically active substances and lipids. These additives can be included in our special technical detergent.

In the next stage, the physicochemical properties of the bleached soil were studied, in which oils were obtained after adsorption refining of various oils and a comparative analysis with other oils was carried out.

The results obtained are shown in the table below.

2- table. General characteristics of cultivated soil

Indicator	Characteristics
Appearance	Dark gray paste as maz
Smells	Compatible with refined oil.





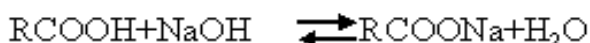
Fatness %	55-65
The number of acids KOH/r in oil	0,4
The number of peroxides $\frac{1}{2} O_2$ mol / kg	10
Adsorption capacity: 2 soil / mmol carotene	7,77
2 soil / chlorophyll mmol	0,474
Mass fraction of phosphalipids %	0,27
Humidity %	0,2
The amount of unsaturated fatty acids (%) relative to the amount of fatty acids	49-66

Thus, the chemical composition and characteristics of the recycled bleaching soil after refining four different oilseeds sunflower, rapeseed, soybean, and corn were studied. From the results obtained we can conclude the following. Hence, processed bleached soil is a product enriched with biologically active substances and lipids. It can enrich the recipe by adding additives to the composition of technical detergents.

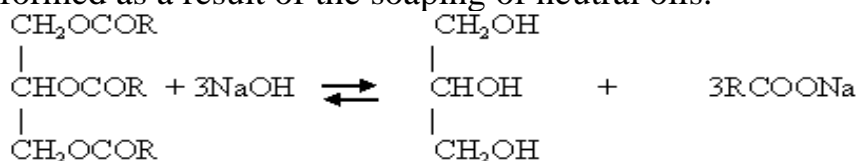
In the experiment, instead of vegetable oils in household and technical detergents, the oil industry made efficient use of secondary resources. It was observed that the total oil, micronutrient content, linoleic acid, as well as other quality indicators correspond to the demand and supply of technical detergents.

In our country, a wide range of oils and oil substitutes are used for the production of household and technical detergents. These include: high-titration salomas fatty acids derived from vegetable oils; C_{10} - C_{16} and C_{17} - C_{20} fractions of synthetic fatty acids; soapstock fatty acids and animal fats obtained from the refining of vegetable oils. Technical animal fats, oil substitutes and greasy wastes with a dark color and unpleasant odor are used only if the quality is improved. The composition of the new recipe we developed should be 35-37°C with the titer of the oily mixture shown in the table.

Based on the above greasy recipe, we came to the conclusion that calcined soda can be used when cooking fatty soaps in large quantities and it was decided to cook the soap according to the recipe in the production conditions. Soap is formed due to the neutralization of fatty acids with caustic and carbonate alkalis.



Soap is also formed as a result of the soaping of neutral oils.



Potassium carbonate and potassium hydroxide are used to make liquid soap. The reaction to obtain ethanolamine soap is as follows:

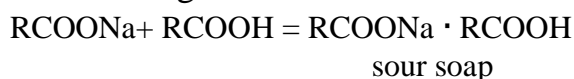




three ethanolamines

ethanolamine soap

In any method of soap production, in order to prevent the formation of sour soap, the soaping process is carried out in the presence of excess alkali. The formation of sour soap is characterized by the following reaction.



Many types of alkalis used in soap production have been tested. In particular, a lot of research has been done on carbonated soap and various technologies have been recommended. However, carbonated soaping did not give good results. The main reason for this is the use of neutral oil-containing raw materials in the production of soap, including soapstock (a supplement containing up to 50% neutral fat), technical and nutritional salomas, animal fats, etc. The peculiarity of these oily raw materials is that strong alkalis are required to soap them. As a result, carbonated soaping is ineffective [5].

Until recently, in the production of soap in the country used caustic soda (caustic soda), which has a strong alkaline properties, due to the use of oily raw materials that contain a neutral oil.

Today, as a result of the development of technologies and the oil and fat industry, the cleavage of fatty raw materials and the production of glycerin, not only fats are widely used in the production of soap, but also fatty acids isolated from them (fatty acids of SYOK, Duke, salomas) [6].

As a result of the research, if we pay attention to the recipe for the production of new types of household and technical detergents that we recommend (Table 3), we can see that it does not use pure oils, but generally contains fatty acids and dispersed fatty wastes.

3-table. The amount of fatty acids

Type of raw material	The amount of fatty acids	
	№1 30%	№2 40%
ДФА (distilled fatty acid)	10	15
ДОВ (dispersed oily waste)	5	10
Soapstock	15	15

Analyzing the data in Table 3, in Experiment №1, the amount of DJK is 10%, DOW 5%, Soapstock 15% of total fatty acids and dispersed fatty wastes 30%. In tajrib2 experiments, the amount of DJK was 15%, DOW 10%, Soapstock 15% of total fatty acids and dispersed fatty waste 40%. Based on experiments №1 and №2, we develop a fatty recipe 1.

Based on the above, based on the results of research conducted in the country and abroad, we have concluded that the use of weaker alkalis instead of caustic soda in the production of soap may also be effective.

To test the estimates, we used isolated fatty acids in our above experiments. Saturated solution of calcined soda and 40% solution of alkali were used in different proportions for saponification. Calcined soda was made in samples from the Kungrad





soda plant. The results of the experiment are given in Table 4.

4-table. Results of saponification of fatty acids obtained based on recipe 1

Number of experiments	Caustic soda / sodium carbonate ratio	Soap indicators			
		Hardness, g / cm	Foaming property, mm	Flow rate, mg / m	Consistency
№1	100/0	490	280	14	Same-sex
№2	80/20	462	301	16	Same-sex
№3	60/40	431	323	17	Same-sex
№4	50/50	419	335	17	Same-sex
№5	40/60	413	349	20	Same-sex
№6	20/80	406	354	22	Same-sex
№7	0/100	389	360	27	Sandy

Alkaline solutions were first prepared to form a technical detergent. Then 10–100 g of calcined alkali was added to 1 g of fatty acids per minute, while boiling to a saturated mass. The completeness of saponification was checked with litmus paper, the carbonation saponification was continued until it was gone, and the complete saponification was carried out with caustic alkali.

Analyzing the data in Table 1.4, in experiment №1, the degree of saponification was complete when the amount of caustic soda was 100%, and the hardness of the resulting mass was 490 g / cm. The foaming feature was 280 mm. The absorption rate was 14 mg / m.

Conclusion

An increase in the carbonate fraction for saponification from 20% to 80% (№2 – №6) resulted in a decrease in the hardness of the resulting mass from 462 g / cm to 406 g / cm, and an increase in the foaming property from 301 to 354 mm. The consistency of the samples was observed to be homogeneous and concentrated. However, when fully calcined soda was used as an alkali (№7 experiment), it was observed that first the hardness of the sample decreased from 400 g / cm, the degree of permeability dropped to 27 mg / m instead of the optimal 20-25, and the consistency was uneven. It can be understood that this condition depends on the purity level of the fatty acids. This is because, although it is theoretically possible to decompose 100%, it is generally the case that the decomposition rate of oils does not exceed 95-97% under production conditions.

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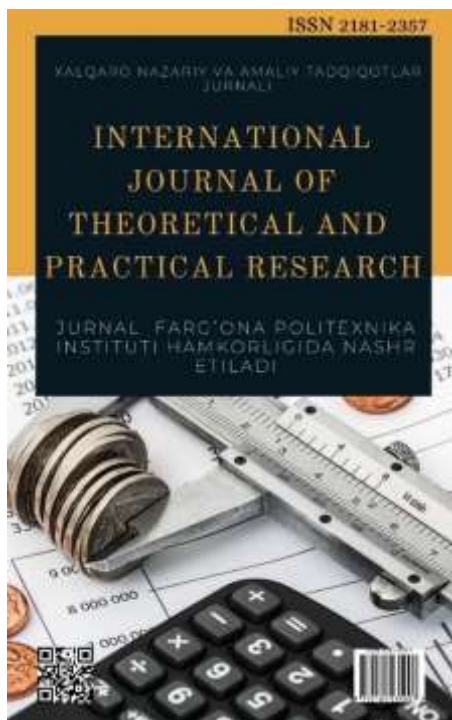
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Хурматли ҳамкасабалар “Al-Ferganus” нашриёти ва “Xalqaro nazariy va amaliy tadqiqotlar jurnali” электрон журнали Ўзбекистон таълим хизматлари бозорида ўзининг фаолиятини бошлаганлигини маълум қиламиз.

Ажойиб имкониятдан сиз биринчилар қаторида фойдаланиб илмий нашрларингизни чоп этишингиз мумкин.

“Al-Ferganus” нашриётимиз томонидан Сиз тақдим этган дарслик, ўқув қўлланма, монография ва илмий рисолаларга ISBN, Doi халқаро рақамли идентификаторларни бириктириш, уларнинг электрон замонавий андозадаги муқовалар ва ишланмаларнинг электрон макетини яратиш, нашриётда эълон қилинган ишларни электрон ахборот нашрларида жойлаштириш хизматлари кўрсатилади.

Бизнинг нашриётимизнинг бошқа нашриётлардан фарқи шундаки, тезкор ва сифатли хизмат кўрсатамиз ҳамда энг асосийси биз Сизнинг ишларингизни Алишер Навоий номидаги Ўзбекистон Миллий кутубхонаси ва Россия Миллий кутубхонаси фондларига бепул жойлашга шунингдек, Россия илмий иқтибослик индекси (РИНЦ ва E - library) платформасига, CrossRef базаларига шартнома асосида жойлаштиришга кўмаклашамиз.

“Xalqaro nazariy va amaliy tadqiqotlar jurnali” ISSN 2181-2357 электрон журнали ҳам ўз фаолиятини бошламоқда. Бизнинг журналда Ўзбекистон Республикаси Олий аттестация комиссиясининг куйидаги ихтисосликлари физика-математика, кимё, биология, геология-минералогия, техника, қишлоқ хўжалиги,





тарих, иқтисодиёт, фалсафа, филология, география, юридик, педагогика, тиббиёт санъатшунослик, архитектура, психология, социология фанлари бўйича миллий ва хорижий муаллифларнинг фанлардан эришган ютуқлари ва истиқболлари борасидаги илмий мақолалари, илмий тадқиқотлар олиб бораётган олимларнинг илмий изланишлари натижалари эълон қилинади. Электрон журнал ҳар ойда бир марта эълон қилинади.

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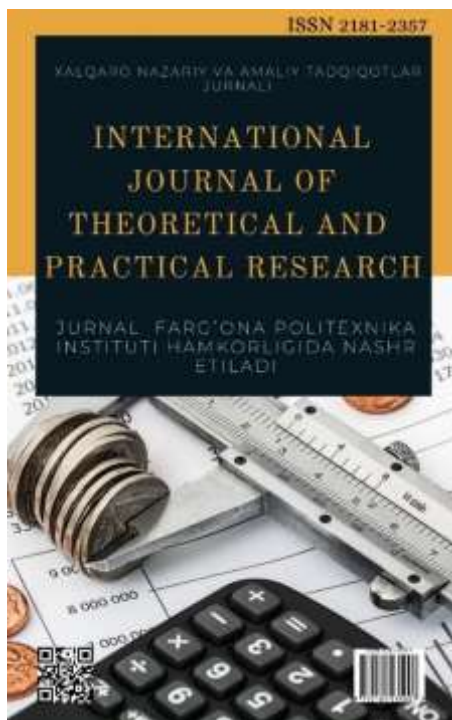
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Муминова Э.А.,
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Тўқимачилик саноати кластерлари
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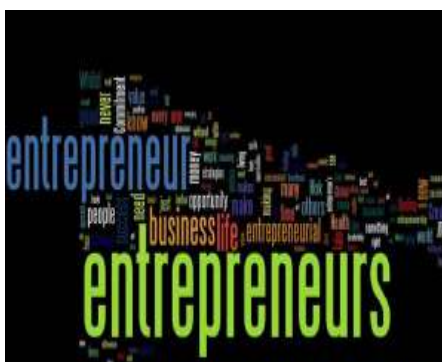
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M.S. Ashurov,
K.I. Kurpayanidi

RAQOBATBARDOSH MILLIY INNOVATSIYA
TIZIMINI SHAKLLANTIRISH
MUAMMOLARI VA YECHIMLARI

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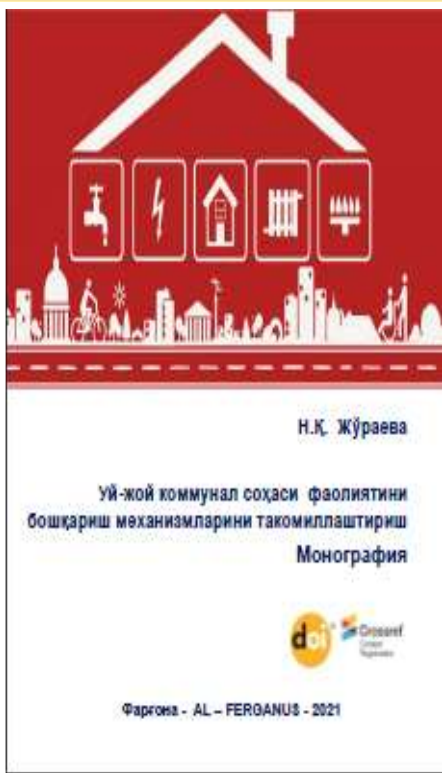
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ПАРАДИГМАСИ: МЕТОДОЛОГИЯ, ТАЖРИБА
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