



## Creating a Method for Activating Alkaline Bentonite of Navbakhor to Justify the Local Plant Oils

Bayjanov Islam<sup>1</sup>, Kurambaev Sherzod<sup>1</sup>, Axmedova Shahlo<sup>2</sup>

<sup>1</sup>Teacher, <sup>2</sup>Methodist

<sup>1</sup>Docent at Department of Chemical Technology, <sup>2</sup>Methodist of Faculty Chemical Technology Candidate of Technical Sciences, Urganch State University, Urgench, Uzbekistan

### ABSTRACT:

This article offers an optimal method of activation for industrial application of alkaline bentonite of Navbakhor and results of its testing.

**Keywords:** Bentonite; thermal activation; fat-and-oil; level of justify the fat; red unit; yellow unit; adsorbent; temperature; alkaline - bentonite.

### I. INTRODUCTION

In Uzbekistan, the use of adsorbents, mainly imported from foreign currency, is used to justify plant oils. This leads to the increase in foreign exchange reserves and high oil and fat prices. That is why it is important to take bentonite on the basis of local raw materials. Laboratory experiments on adsorbents based on Navbakhor bentonite clay were carried out at the Scientific Research Laboratory of "Istiqbolli Tadqiqotlar", organized on the order of the rector of UrSU in March 2011.

In order to determine the optimal parameters of alkali and alkaline earth bentonite, the Navbakhor specimens were measured at 100 grams on a technical scale, with a maximum resolution of 2-3 cm at different laboratory temperature units (interval 40° C) and a different time interval (1 hour interval) dried. Then experimental samples were examined in the specimens until adsorbent specimens were applied to the sorbent value of the impregnation rate of № 0056 (10000 gallon/cm<sup>2</sup>) at 0.5-50%.

The study of the influence of adsorbent on adsorbing properties of thermal activation was carried out at the central laboratory of OJSC "Urgench Oil-OJSC",

which was directly used to justify cotton oil, soybean and sunflower oil from plant oils due to innovative nature of the project.

Justification of cotton oil was carried out in a water bath by conventional methods [2] at 100 °C and stirring for 30 min. All test experiments conducted on the determination of the adsorbed sorbents were carried out in 10 liter samples of cotton oil, which was washed with water and after the drying step (initial color different) from the refining shop of Urgench Oil-OJSC.

### II. RESULTS AND DISCUSSION

Table 1 below shows the results of the thermal activation in the samples taken from cotton oil, which is the initial color of 10 red units, on the alkaline and alkaline-earth benthonites of Navbakhor.

Table1. Effect of thermal activation on the adsorbent properties of alkaline and alkaline-earth benthonites in Navbakhor

Thermal activation time, (hour)	Activation temperature, ° C					
	110	150	190	230	270	310
	1% Alcoholic cotton oil color in the alkaline Navbakhor bentonite, red unit					
1	9,8	9,5	9,0	9,1	9,4	9,5
2	9,5	9,2	8,5	9,3	9,6	9,7
3	9,6	9,1	8,5	9,4	9,7	9,8
4	9,5	9,0	8,5	9,5	9,9	9,9

Thermal activation time, (hour)	Activation temperature, °C					
	110	150	190	230	270	310
	1% Alkali, cotton bloom in Navbakhor bentonite, colorful, cotton, red unit					
1	9,9	9,8	9,7	9,6	9,7	9,8
2	9,8	9,7	9,5	9,7	9,8	9,8
3	9,8	9,6	9,5	9,8	9,8	9,9
4	9,7	9,5	9,5	9,8	9,9	10,0

In Table 1 above, the adsorbing ability of the alkaline bentonite of Navbakhor significantly increased as a result of thermal treatment, and the optimum parameter for this was the drying temperature of 190-210 °C, drying time – 2 hours. It is also clear from this table that Navbakhor's alkaline-earth bentonite adsorption capability has increased dramatically by thermal treatment.

Further research the Navbakhor alkaline bentonite activation method has been maintained at Navbakhor alkaline bentonite, which has the highest whiteness rate, drying time of 2 hours, and drying temperature of 190-210°C, which is thermally activated under optimal conditions.

The residue remaining in the sieve was 0.5% in the range of 3600 g/cm<sup>2</sup>, 6000 g/cm<sup>2</sup> and 10,000 g/cm<sup>2</sup> in order to compare the whiteness ratio of the first 10 cotton red oils tested. It was observed that the color of the cottonseed oil was up to 9.5 red units, 6000 g/cm<sup>2</sup> samples (1%), and the color of the cottonseed oil was reduced to 9.0 red units at 3600 g/cm<sup>2</sup> samples (1%).

Considering that the fractions of less than 0.001 mm have a high adsorbing ability [1] and that the fraction can increase the filtration time by 1.5 times, the residual dampness level of 10,000 g/cm<sup>2</sup> should remain 0.5 to 25% was adopted.

Also, the effect of mixing the adsorbent and cotton oil at the constant temperature (100 °C) on the samples of the alkaline bentonite of Navbakhor in thermally activated conditions under the optimal conditions was assessed on the degree of justification of the initial color cotton oil equal to 10 red units. The results are shown in Table 4 below.

Table 2. Influence of the time of mixing the alkaline bentonite of the Navbakhor with the thermal activation on cotton oil level

Mixing time, min	15	30	45	60	90
Color in red	8,9	8,5	8,6	8,9	9,1

The table above shows that the optimal mixing time is 30 minutes. In addition, the sample of the alkaline bentonite of Navbakhor under thermally activated conditions under various conditions was used to justify various oils at different times. The results obtained in Table 3 are summarized below.

Table 3. Indicators of cotton lubricants produced by different seasons using the Navbakhor alkaline bentonite.

The first cotton oil color, red and blue in the equation (justification time)	Quantity of experimental adsorbents, %			American "Pure-Flo Supreme B81" brand amount of adsorbent, %	
	1	2	3	1	2
	elegant cotton oil color, in red and blue unit				
23 Ba 2, (2011 July)	13 and 1	12 and 1	12 and 1	12,0	7,5
14 and 1, (2011 september)	12	11	11	10	7
10, (2011 June)	8,5	8,0	8,0	7,0	5,0
9, (2011 october)	4,5	4,0	4,0	3,5	3,0
28 Ba 3, (2012 mai)	19 and 1	17 and 1	-	18 and 0,5	16 and 0,5

As a result of numerous series tests, the level of neutralization of cotton oil with Navbakhor alkaline bentonite, activated by thermic activation, indicates that the degree of justification of the differentiation of cotton fiber, which is different from the original color, produced at different times.

It should be noted that the adsorbent obtained in the method described above has a good effect on the use of no more than 1% in the whitening of the relatively high initial fat content. At the same time reducing the amount of alkaline used for refining, the higher the

degree of coloration (12 to 15 red units), and the reduced cost of whitening the vegetable oil by mixing this low cost adsorbent with high-quality adsorbents.

In addition, the adsorbent sample obtained from the thermal activation of the Navbakhor alkaline bentonite is difficult to cope with cotton oil (due to increased moisture and heat acidity, as well as the formation of new fertilizer additives in cotton seeds). Thus, in October 2011, it was pointed out that the yield of the samples taken from the new cotton seeds was higher than that of adsorbents (table 3). The 1% buster adsorbent was lowered to about \$ 4.5 per pound of cotton in the first color, and the same color of cotton oil was paralleled by the adsorbent. It has been recorded that 3.5.

### III. Conclusions

In summary, it can be said that the sorbent with enough adsorbent properties can be obtained by thermoactive activation of the alkaline bentonite of Navbakhor. However, the degree of justification of this sorbent for vegetable oils is slightly lower than that of traditional sorbents, which are treated with acid. However, this very cheap adsorbent, which can only be obtained by thermo-activation, checks the level of justification of vegetable oil at the factory laboratory, and gives high economical results, with good results and mixing with high-quality adsorbents in the required quantity. Based on this we find that it is not necessary to treat acids with alkaline bentonite in Navbakhor. Considering that the alkaline-earth bentonite activity in Navbakhor has a small increase in thermal treatment, it is desirable to use acids to increase its activity.

### IV. References

1. Ovcharenko F. D., Nichiporenko C. P., Kruglitskiy N. N., Tretinnik V. Yu. Studies in the field of physico-chemical mechanics of dispersed clay minerals. Kiev, 1965.178P.
2. Manual on methods of research, technochemical control of production accounting in fat and oil industry. Volume 6, issue 2, L., VNIIG. 1974. "Test bleaching of vegetable oils", pp. 99-107.