

Areas of Use of the Obtained K-Pac (Potassium Polyanionic Cellulose) Grades, Their Physical-Chemical, Mechanical Analysis

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Stabilizing reagents are considered one of the main raw materials for the production of construction materials. Their quality indicators indicate that they provide stability as a stabilizing reagent in a composite mixture in phase. There must be instructions for their production. Taking into account the above, a working manual was proposed to clarify the quality indicators for some of the stabilization reagents. Below is this guideline.

1-table. Comparison of the quality indicators of K-PAC samples obtained compositely from pohl and textile cellulose according to the brands of Ts 22235949-003:2015 and the demand indicators given in Ts 22235949-003:2015.

Descriptions of indicators	70/600-0	85/700-C-O	85/700-PO	The example ^{*1} (85/700-PO)	The example ^{*2} (70/600-0, 85/700-C-O)
1. Appearance	White powder	White powder	White powder	White powder	White powder
2. Mass fraction of water, % not much	10	10	10	5	6
3. According to the degree of substitution of the carboxymethyl group, not less	0,65	0,7	0,6	85	87
4. The mass fraction of the amount of the main substance in the absolute dry product	97	97	63	89,4	87,8
5. Its solubility in water, %, is not low	98,5	-	97	98,9	99,1
6. The dynamic viscosity of a 2% aqueous solution of KMTs at a temperature of 20 ⁰ C, mPa*s, is not less than	100	100	100	-	-
7. Hydrogen number (pH) of KMTs solution in water with a mass fraction of 1.5%	7,0±0,5	6,7-10,0	8-10	9	10
8. The water return index of the KMTs* soil solution with a mass fraction of 0.75% calculated on the main substance, cm ³ /min, not more	4	-	4	3,8	3,4
9. Degree of polymerization	600	700	700	1100	670

*1- K-PAC obtained on the basis of fibrous waste of textile enterprises (TKTCH).

*2- It is obtained from cellulose husk K-PAC

*3- KMTs (Carboxymethylcellulose)

It was determined that the quality indicators of the received stabilizing reagent samples correspond to the requirements specified in Ts 22235949-003:2015 and Ts 22235949-003:2015. The results were found to be positive and it was proposed to be applied to production.

Fields of use of K-PAC brands, their physico-chemical, mechanical analysis.

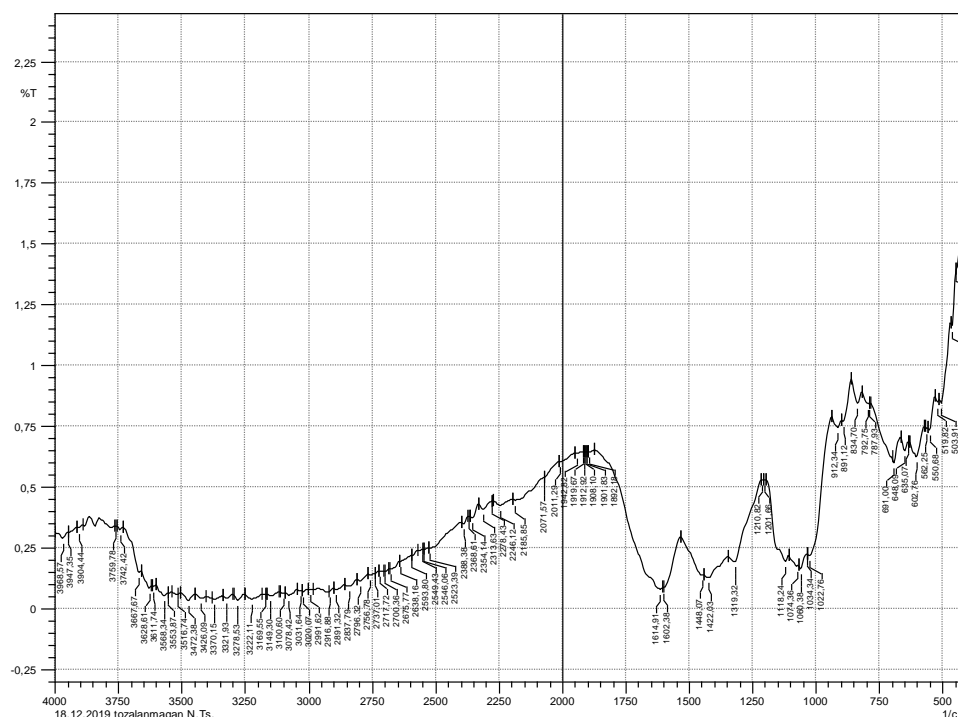
The reagent obtained on the basis of the research was developed and recommended as a stabilizing agent in the composition of liquid-phase emulsions, mainly for dry composite mixture putties in the construction industry. In addition, it was recommended to use as a stabilizing reagent for drilling mixtures used in oil and gas extraction, the indicator of "water return index of KMTs soil solution with a mass fraction of 0.75% calculated as the main substance, cm³/min, not much", which is the main indicator among their quality indicators.

The use of lignin contained in the alkali curd produced during the cellulose extraction process in the drilling mixtures as an inhibitor was demonstrated.

It has been shown by the research analysis that phenol, benzene, hydroxyl, carbonyl groups in lignin are used as protective inhibitors preventing the partial absorption of heat and the decomposition of reagent macromolecules in preventing thermal destruction during drilling. In this study, based on local raw materials, it is aimed to create a technology for obtaining import-substitute, export-oriented modified barite and barite concentrate thickeners based on barite ores, barite concentrates, which are used to increase the density of drilling fluids used in drilling oil and gas wells in the production conditions of JSC "Uzbekneftgaz" and in neighboring production enterprises.

The scientific significance of the project is that the optimum conditions in the stages of developing technology for drilling mixtures with improved properties from local raw materials are firstly based on mathematical modeling, and then based on scientific research, the optimal conditions and critical points of the synthesis parameters are defined and determined during the research, various organic and inorganic, such as minerals creation of a barite concentrate production technology based on the results of scientific experiments obtained as a result of researching the effects of reagents.

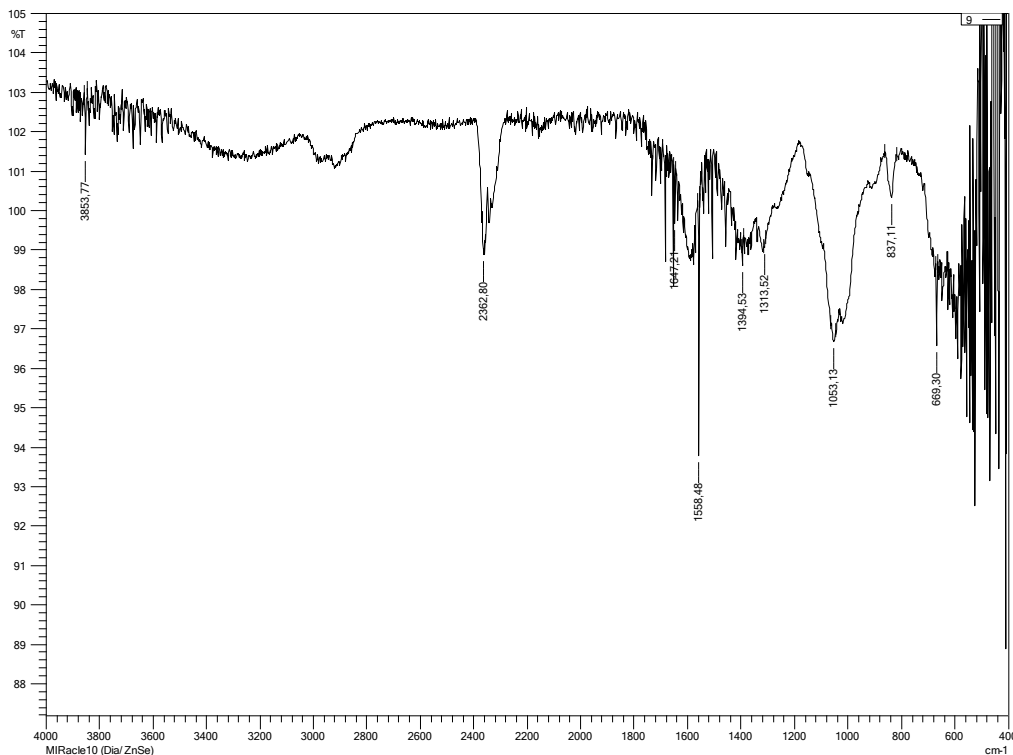
The following figure shows the IR-spectrum of technical K-PAC, and it is possible to observe the degree of exchange of functional groups with the hydroxyl group of cellulose during the period of obtaining the reagent.



1-picture. IR spectrum of technical K-PAC

445.27 P-phenylazocarbanillic acid, cedrolovic ether 445.92 Hydrate 1,1-dioxo-1,2-benzothiazol-2-id-3-one zinc 461.47 1.1609-9- Methyl-3-oxo-9-azabicyclo [3.3.1] nonan-7-ol, benzylate ester, methobromide Formula: $C_{23}H_{28}BrNO_4$ 503,91 0,8447-Melesitose, monohydrate 519.82 0.8478-Bis(4-tert-butylphenyl) 4-cyclohexylphenyl phosphate Formula: $C_{32}H_{41}O_4P$ 550.68 0.7376-4- [3-(2-Trifluoromethyl-10-phenothiazinyl) propyl]-1-piperazinethanol, acetate, dihydrochloride Formula: $C_{24}H_{30}Cl_2F_3N_3O_2S$ 562.25 0.7411: 561.76 Oxalate cerium 561.95 Rhodium, tris(1,1, 1-triflor-2,4-pentandionato)- 602.76 0.6279.

The following picture shows the IR spectrum of K-PAC obtained from cellulose based on textile waste.



2-picture. The IR spectrum of K-PAC is presented

It can be observed from the spectra that, after the process of obtaining the reagent, the IR-spectrum was obtained after the technical PAC were extracted once in ethyl alcohol. Observations showed that the glycolates that did not enter into various reactions or separated after the reaction were cleaned in ethyl alcohol, and the quality indicators of the reagent improved, especially the increase in the amount of the main substance can be observed in the spectrum points.

As a conclusion to this section, it should be noted that in the research of the department, the study of the production of stabilizing k-pac brands for the construction industry based on rice straw and textile cellulose, the stages of the production of composite brands of K-PAC, which stabilize the composition of various putties and emulsions for the construction industry, and the obtained composite K-Mastering the composition of PAC as required by the field - mastering the guidelines and areas of use of K-PAC brands, their physico-chemical, mechanical analysis measures have been thoroughly studied.

The reagent obtained on the basis of the research was developed and recommended as a stabilizing agent in the composition of liquid-phase emulsions, mainly for dry composite putties in the field of construction. In addition, among their quality indicators, the main indicator is "the water return index of KMTs soil solution with a mass fraction of 0.75% calculated as the main substance, cm^3/min , not much" indicator, it is recommended to be used as a stabilizing reagent for drilling mixtures used in oil and gas production.

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