Table 1. Specific surface and specific pores volume for the sorbent and its components

Sample	Specific surface, m^2/g	Specific pores volume, cm^3/g
Aerated concrete	12.42	0.005
Hematite	13.56	0.006
Iron oxyhydroxide	227.6	0.089
Sorbent	188.23	0.081

for the contact time 0.5, 1, 5, 15, 30, 60 and 150 minutes. The values of specific surface and specific pores volume for the sorbent and its components are shown in Table 1.

As evident from the table, the active component in the form of iron oxyhydroxide and the prepared sorbent had the most values. One the other hand, the lowest parameters of specific surface and specific pores volume were characteristic of the hematite and the aerated concrete. The results of the sorption experiments are shown in Figure 1.

It can be seen from the figure that already in the first minute there is an almost complete purification of the model solution from As (III) ions at a concentration of 5.17 mg/dm^3. The solution with a concentration of 40.21 mg/dm^3 with a small process time is cleared worse and only after prolonged contact with the sorbent, the degree of extraction is almost equal to the degree of extraction from solutions with smaller concentrations of arsenic.

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APPLICATION OF OPTIMIZATION TECHNOLOGY FOR THE STUDY OF THE CHEMICAL AND PETROPHYSYCAL PROPERTIES CONTAINER ROCK

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Effective conducting of geological exploration complex and subsequent construction of geological models of oil and gas fields are possible only with full study of core samples.

The rocks which form the oil-bearing formations are filled with hydrocarbons, that is why, it is essential not just to be aware of mineral composition of rocks, but also know the chemical and petrophysical properties of the reservoir rocks (carbonate content, apparent porosity, gas permeability, density, clay content, compressibility, residual water saturation, wettability, electrical resistivity, etc.).

Techniques effectiveness increasing is a crucial direction in improving the methodological approaches which are used to conduct laboratory studies of core samples.

The purpose of this work is to study the feasibility of practical implementation of methodological approaches which allow to improve the efficiency of the sample preparation process during petrophysical studies.

It is known, that for conducting standard and special studies, core samples undergo several stages of sample preparation, including cleaning and drying process. During cleaning oil, bitumen, water and salts are eliminated from pore spaces. Then, after extraction, but before drying, it is necessary to split samples into 2 groups [1, 2]. The first group of samples with high clay content (>30% clay minerals content) must be dried at a temperature of 70 °C. However, Standards of both countries do not specify the procedure of how to select heavily clayish core samples from all core samples.

Thus, it is worthwhile to note that the granulometric analysis of the core samples and X-ray phase analysis for rocks mineral composition study require special equipment and they are labor-intensive and time-consuming.

The problem was to divide core samples into two groups depending on their clay content and, in this paper, application of the express method of the indicator solution for solving this essential problem of samples segregation was proposed [3, 4]. The degree of transparency of water solution of methylene blue after the interaction with the rock was analyzed.

In the present work, the general mineralogical compositions of samples were determined using x-ray phase analysis (XPA). The mineralogical compositions of the samples were determined from the ratio of principal diagnostic reflections in diffraction patterns obtained under rigidly constant exposure conditions with observance of special safety requirements for working with sources of ionizing radiation.

The optical density of the indicator solution was determined on a KFK-3-01 photoelectric photometer using the optimum spectrum recording conditions. Solution optical density was measured at wavelength 665 nm, which corresponded to the absorption maximum of an aqueous solution of methylene blue.

For the experiment, several samples from the productive formations of the Western Siberia region were taken, represented by fine-grained sandstones. It is crucial to note that for siltstones and sandstones visual determination of clay content is the most difficult procedure.

The clay content in the samples varies from 14 to 33 %.

Clayey minerals were primarily kaolinite and chlorite.

Water solutions after interaction with the samples with high clay content (>30 % clay minerals content), do not have any color. Consequently, the temperature in oven, where dry core sample, should not exceed 70 °C.

Thus, indicator solution method in laboratory practice of chemical and petrophysical studies makes it possible to increase the efficiency of clay minerals content determination. It is crucial to note, that incorrect core samples separation based on their clay content may cause the structural damage of their pore space.

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INVESTIGATION THE EFFECT OF DIESEL FUEL FRACTIONAL COMPOSITION ON THE EFFECTIVENESS OF LOW-TEMPERATURE ADDITIVES

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The consumption level of the diesel fuel (DF) in Russia considerably increases every year. The climate of some country regions is cause of need for winter and arctic brand of diesel fuels. The simplest way to achieve the required low-temperature properties of the fuel is the using of additives. However, additives effect different on various fuels, because of existence of interaction between the additives components and the hydrocarbons which diesel consist [1].