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Research Article

Obtaining Lightweight Bounding Drilling Fluids Applied In Wells # 202 At The "Alan" Deposit Using Industrial Waste

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Obtaining Lightweight Grouting Solutions When Using Industrial Waste

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The article presents the ratios between the densities of the lightened tamponage alloys used in the reinforcement of oil and gas wells with anomalous low formation pressure (ABL) mixed in different proportions with the softening materials.

In this article, the dependence between the densities of the mixture of light cement solution for fastening of oil and gas wells with abnormally low formation pressures (ANPD) in different proportions of lightening materials.

This article describes the relationship between the density of the mixture forming composition lightweight mortar for securing oil and gas wells with abnormally low reservoir pressures (ALRP) in different proportions to facilitate materials.

Abstract:
The construction of oil and gas wells is considered to be one of the most complex mining and geological and engineering constructions, the most important of which is the discovery of productive horizons as a priority. Until recently, the discovery of a productive facility was technologically small compared to the dismantling of overgrown breeds, and on the basis of the development of technological programs were left technical and economic issues without complications and as much as possible. During this period you can get good results from the permeability of the hydrocarbon layer.

Attention was drawn to the possibility of gas manifestations, in connection with which preventive measures were taken. Since the exit and entry of drilling fluid is the main factor in these processes. Especially where pressure is abnormally low than reservoir.

The efficiency of the development of oil and gas wells is largely determined by the state of the bottomhole zone during the completion period, i.e. well casing. As a result of mining and geological, physicochemical and mechanical impacts when casing wells, the reservoir properties of rocks in the bottomhole zone, especially the production intervals, change.

The physicochemical effect on the bottomhole zone is due to the interaction of the formation fluid and the filtrate of drilling and cement mud, as well as the action of adsorption, capillary and diffusion-osmotic forces.

The following factors have a physical and mechanical effect on the productive horizon:

- unloading of the rock mass as a result of drilling out the seam;
- changing back pressure of the mud column (subsequently changing pressure of the cement column);
- filtration of drilling (and cement) mud filtrate;

- changing temperature conditions in the well;
- hydrodynamic and mechanical impact on rocks in the formation being drilled with a moving tool;
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hydrodynamic and mechanical impact on rocks in the formation being drilled with a moving tool

The ability of oil well cements after mixing with water to structure and harden (turn into stone) led to their use for cementing wells..

With regard to Portland cement (which is used as oil well cement for "cold" and "hot" wells), the first stage of structure formation is the appearance of a coagulation structure of the initial cement particles and hydrated neoplasms. At the second stage, a continuous loose crystallization structure of the hydroaluminate develops, which usually collapses upon stirring the solution. The third stage is the formation of the crystallization structure of hydrosilicates.

When cement is mixed with water, a small part of it dissolves first, which enters into chemical interaction with water, until saturation.

Then comes the period of colloidation, characterized by a high dispersion of cement particles - the period of actual setting (coagulation structure formation), which turns into the actual hardening (crystallization period) of the solution when the system passes from a less stable state to a more stable one.

Temperature and pressure have a significant effect on the hardening process of the cement mortar. With their increase, hydration accelerates, the solubility of solids in the liquid phase changes, and the phase composition of the hydration products of cements, slags and other binding materials also changes.

In the annular space, a situation may arise in which the simultaneous mixing of the cement slurry and a change in temperature will lead to the setting and hardening of the cement slurry in separate zones. The picture will take on an even more mosaic character if we take into account the effect of the increased water-cement ratio and the changing concentration of reagents - structure-forming agents.

If under normal conditions the added sand is practically an inert filler, then at elevated temperatures the quartz becomes active and interacts with the constituents of the cement. Well casing is considered the most basic part of the job. The composition of the lightweight grouting slurry is determined by the requirements of bottomhole conditions when casing wells [2].

Occurring ANPD of oil and gas wells in fields such as Bukhara-Khivinsky, Ustyurt and others require cement slurries with a low specific gravity.

For cementing oil and gas wells, the following formulations of grouting cement slurries are used:

- bentonite + cement;
- asbestos + cement;
- microsphere + cement;
- vermiculite + cement and others.

From the experience of using cement powders in the Republic of Uzbekistan, the formulations were currently produced in the field, which is undesirable due to the large spread in the weight components of the components and the increased cost.

This disadvantage can be eliminated by selecting the formulation of powders and producing the required oil well cement under production conditions [3].

The authors carried out experiments to obtain a lightweight cement slurry from industrial waste. The results are shown in Table 1.

Table 1

The obtained results of grouting solution with the addition of industrial waste (recipe-1)

Отход (рецепт-1), %	в/ц	Растекаемость, м	Плотность, кг/м^3	Время загустевания при температуре T=80 ^{0}C, мин-час.		Прочность, МПа			
						T=80 ^{0}C		T=120 ^{0}C	
				начало	конец	изгиб	сжатие	изгиб	сжатие
-	0,5	0,23	1810	0-55	1-15	5,4	12,3	7,6	9,3
10	0,5	0,22	1780	1-10	1-35	5,5	8,5	7,0	10,0
20	0,5	0,21	1770	135	2-10	4,9	8,8	6,7	9,0
30	0,5	0,17	1780	2-40	3-15	3,7	8,0	6,7	7,8
40	0,5	0,21	1670	2-40	3-20	3,4	6,5	8,6	7,5
50	0,5	0,20	1650	2-45	4-05	3,6	7,3	6,4	6,5
50	0,5	0,23	1600	3-20	5-10	3,0	6,0	6,0	6,0

Зависимость $\rho = f(C)$ и $\sigma_{из} = f(C)$ при 80 °C через 24 ч.
Зависимость $\rho = f(C)$ и $\sigma_{из} = f(C)$ при 120 °C через 24 ч.

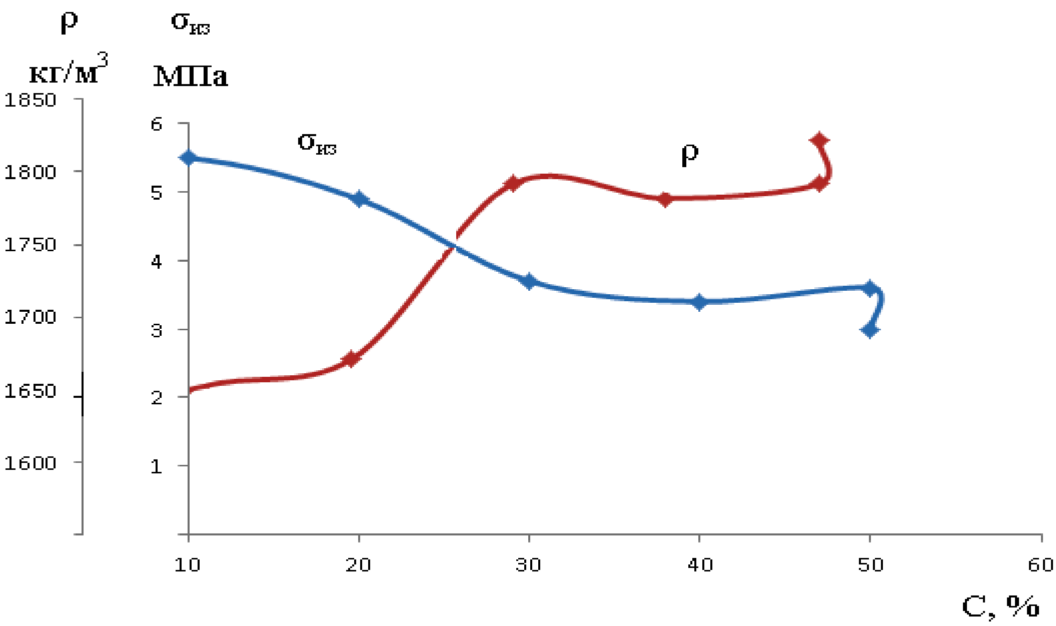

Figure 3.3 - the results of the grouting solution with the addition of industrial waste according to the graph of the dependence ρ = ƒ (C) and σfrom = ƒ (C)

Table 2 shows grouting cement solutions with the addition of industrial waste (recipe-2).

table 2

The obtained results of the grouting solution with the addition of industrial waste (recipe-2)

Waste (recipe-	Accelerat or	w / c	Spread, m	density, kg / m3	Conditions	Thickening time, min-hour.	Strength, MPa

					T, ^{0}C	P, MПa	Strength, MPa	end	bend	compression
100	0,7	0,5	0,18	1200	75	1	2-00	2-40	40	16
100	1	0,5	0,18	1200	75	1	1-00	1-30	60	18
100	2	0,5	0,18	1200	75	1	0-50	1-20	75	20,2

Table 3 shows grouting cement solutions with the addition of industrial waste (recipe-3).

Table 3 The obtained results of the grouting solution with the addition of industrial waste (recipe-3)

Waste (recipe-3),%	w / c	Spread, m	density, kg / m3	Conditions		Strength, MPa	
				T, ^{0}C	P, MПa	bend	compression
-	0,50	0,18	1820	20	1	28	8
10	1,04	0,18	1600	20	1	2,2	1
20	1,12	0,18	1380	20	1	1,3	0,6
30	1,52	0,18	1,26	20	1	0,5	0,4

Thus, from the results, it can be concluded that the obtained lightweight grouting solutions meet the regulatory requirements for the physicochemical composition of the solutions and the mechanical properties of the resulting cement stone.

LITERATURE

1. N. Yodgarov book. "Chemical reagents and materials for the oil and gas industry" - Tashkent, Voris. 2009 529s
2. Basarygin Yu.M., Budnikov VF, Bulatov AI, Proselkov Yu.M. Technological foundations for the development and killing of oil and gas wells: textbook for universities. 2001.

3. Krylov V.I., Kretsul V.V. Process fluids for well completion and workover. - Tashkent: Branch of the Russian State University of Oil and Gas named after THEM. Gubkina, 2009 .-- P. 192.

4. Potapov A.G. On the issue of geomechanical modeling when drilling wells / A.G. Potapov, D.G. Belsky, O.A. Potapov // Scientific and technical collection "Vesti gazovoy nauki", No. 4 (20), 2014. P.69-74.

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