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ELASTICITY - DEFORMATION OF ROCKS OF MINE SOIL WALLS STATUS STUDY

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ANNOTATION

In this article, the mining pressure that occurs with the increase in the depth of underground mining solders compared to the surface of the earth, the determination of the load affecting the mine reinforcements and the increase of the stability of the massif around the solder are carried out. It is highlighted that it is an urgent topic that is waiting for its solution for transition work.

Keywords: weld , solid rock , deformation , stress, hydro system, hydrometer, massif , well .

INTRODUCTION

In this regard, it is necessary to carry out mining operations safely based on the study of the physical and mechanical properties of the massif around the solder, to choose a durable type of mine reinforcement and to ensure stability of the solder during its service life.

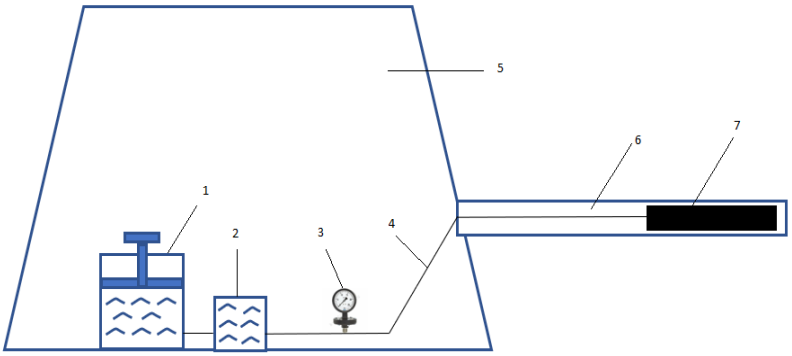
When passing underground mine laminations, the physical and mechanical properties of rocks are referred to when choosing the method of passage. Physico-mechanical properties of rocks can be determined directly in laboratory conditions or directly in the massif where the rocks are located. and mechanical properties of rocks under experimental conditions, natural conditions existing in the massif are not taken into account. Therefore, the values determined directly in the massif where the rocks are located differ in their accuracy.

Determination of physical and mechanical properties of rocks in mining conditions, micro and macro-cracks in the rock massif, tectonic disturbances, natural humidity, dimensions of the rock formation in the massif, and the strength-deformation state of the surrounding rock massif are determined. .

Material and Methods. There are various ways to determine the natural stress-deformation state of the rock massif in mining conditions, and one of them is to determine the modulus of elasticity, one of the deformation properties of the rock massif using cylindrical hydrosensors. In this method, we perform the following steps in order to determine the modulus of elasticity of massive rocks under mining conditions:

- to determine and determine the place of experiment in the project of carrying out welding works;
- t examination of the stability of the surrounding rock (if the surrounding rock is unstable, i.e. it consists of hanging and unstable rock, in the brazing wall hanging rocks are lowered, in some

cases it is necessary to ensure the stability of the test site by installing auxiliary reinforcements);
- the geological structures of surrounding rocks, tectonic disturbances, cracks and other conditions are studied and noted in the experiment book;
- a well is drilled to the required depth to conduct an experiment on the side wall of the solder; the drilled well is cleaned of drill dust and a cylindrical hydrometer is placed inside the well;
- the hydrometer is connected to the hydraulic system before being installed in the well;
- air in the system is released and the system is filled with liquid;
- cases of leakage of liquid from the system filled with liquid are checked; for this, a pressure of 4-5 kg/sm^2 is created in the system and applied for 5 minutes;
- if the situation of liquid leakage does not occur during the interval, then the system meets the requirement;
- hydrosensors prepared for experimental work must be made in a thick-walled metal pipe suitable for the diameter of the well;
- during the experiment, the value of the corresponding volume is determined for each pressure value (Fig. 1).



1- pressure giver hydro system
2- hydrosystem
3- manometer
4- liquid transfer hose i
5- workings
6-well
7- hydrometer

Figure 1. mountain gender elasticity - deformation situation mine conditions determination

RESULTS

In determining and calculating the elasticity-deformation property of the rock array using a hydrometer, the initial value of the well is considered the main dimension. This value is measured within the limit of 4-5 kg/sm^2 pressure by installing a hydrometer in the well , and the value of the initial radius of the well is determined by the following expression.

$$R_c = \sqrt{R_T^{\,2} + \frac{V_C - V_T}{\pi l_P}}, \qquad [1]$$

Here: R_C - the radius of the well where measurement is being carried out, sm; R_T - Inner radius of the cylinder (pipe), sm; l_p - the length of the working shell of the hydraulic pump, sm; V_T and V_C – the value of the volume of the liquid in the pipe and the well at the same pressure indication of the hydrometer, sm^3.

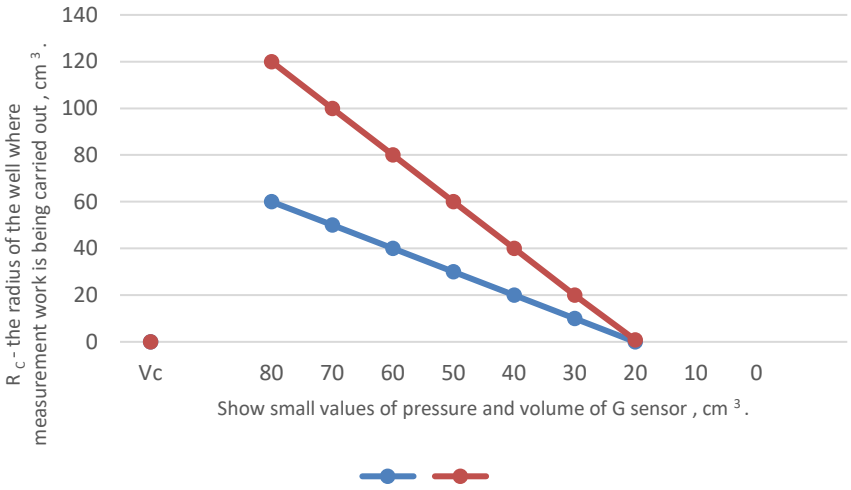


Figure 2. Change in fluid volume (ΔV) and pressure (ΔP) in the hydraulic system status

DISCUSSION

Based on the results of changes in fluid volume (ΔV) and pressure (ΔP) in the hydraulic system, the elastic modulus of the massive rock being tested is determined by the following formula.

$$E = 170\left[R_C{}^2 \frac{\Delta P}{\Delta V} - 2.9\left(\frac{r_1^2}{R_1^2} - 1\right)\right], \qquad [2]$$

Here: ΔP- pressure change created in hydrosystem, kg/sm^2 ; ΔV-pressure change in the volume of liquid in the gyrosystem, sm^3 ; R_C - well radius, sm; R_1 - the outer radius of the hydrometer rubber cover, sm; r_1 - the internal radius of the hydrosensor rubber, sm.

CONCLUSION

The order of experimental work to be carried out in mining conditions, the tools, devices used in it, the obtained results and the results of their calculation, with analysis, the obtained results should be given in the record of the experimental work.

REFERENCES

[1]. Ф. М. Арипова Методические пособие по выполнению лабораторных работ по курсу «Геомеханика. Физико-механические свойства горных пород» Ташкент -1999.
[2]. Shamayev, M. K., Toshtemirov, U. T., Alimov, S. M., Melnikova, T. E., Berdiyeva, D. K., & Ismatullayev, N. A. (2022). Determination of the Installation Density of Anchors in the Walls of a Working with a Quadrangular Cross Section. Child Studies in Asia-Pacific Contexts, 12(1), 362-367. https://www.e-csac.org/index.php/journal/article/view/68
[3]. O‘G‘LI, T. U. T. (2022). RESEARCH BY ENLARGING THE DIAMETER OF CARVING SPURS. Scienceweb academic papers collection. https://dbdxxb.cn/2022-4-toshtemirov-umarali-tulkin-ugli/