technological parameters while drilling, and the dispersed clay minerals particles coming from the drilled rocks. Based on a series of conducted laboratory tests with the use of waste drilling fluids varying in composition, rheological properties, density and content of chemical contamination, it was proven that, using a suitable set of binding agents such as soluble glass - Portland cement or soluble glass - hydraulic binder with a commercial name of Silment, it is possible to perform a colloid suspension solidification process of such drilling fluids in a solid having a specific compression strength and a limited ability to elute dangerous substances.

Based on the waste drilling fluids solidification technology developed by INiG - PIB, bentonite drilling fluid was subjected to the solidification process. To solidify 1 cubic meter of waste bentonite drilling fluid with a density of 1.12 kg/dm^3, characterized by low rheological and structural parameters, minor salinity, high filtration and pH values and containing more than 4% active parts of bentonite, a binding agent composition was used, containing: 4% of soluble glass and 25% of portland cement, as well as 4% of soluble glass and 35% of Silment.

The compression strength teste performed during the solidification process of this drilling fluid of the samples of an intermediate obtained in the 7th, 14th and 28th day, showed a systematic increase in the values over time. The obtained results of compression strength of samples, the binding process of which took place at a max temp. of 10°C, solidifed using a composition of an agent containing 35% of Silment, fell within the range of 0.6 to 0.775 MPa, while when adding 25% of Portland cement - from 0.4 to 0.425 MPa. The tests of water leachate elution from filter sediment of waste drilling fluid and solidified drilling fluid at 1 kg s.m. of sediment: 10 dm^3 of H_2O and toxicity tests of this leachate proved that over time (up to 28 days), in samples containing Silment, a significant reduction in the amount of elution of dangerous substances from the obtained solid was marked, as well as reduction in the toxicity of the leachate.

The conducted industrial trial showed that in order to solidify the waste bentonite drilling fluids it is possible to use an agent composition containing Silment. The solidification process of the used drilling fluids can be one of the ways of managing the liquid waste obtained in significant amounts during drilling works. The developed agent composition for solidification of the used drilling fluids should be considered as an effective agent to bind the entirety of the waste drilling fluids making up liquid and solid phase. The obtained intermediate can be used for utility purposes such as recultivation of surface excavations and filling of underground excavations or even for strengthening of road surfaces of e.g. local roads.

THE ANALYSIS OF THE CHANGES MECHANICAL PARAMETERS OF CEMENT SLURRIES FOR UCGS (CAVERN UNDERGRUND GAS STORAGE DEPENDING ON THE DURATION OF EXPOSURE

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Sealing casings in salt layers requires the use of specially developed cement slurries recipes, which received the cement stones are characterized by an increased resistance to the corrosive effects of salt therefore, it is very essential to carry out detailed examination on the selection of appropriate formulas. Developing an appropriate recipes requires to take action and implementation of innovative laboratory research on selection of the most appropriate types of chemicals and sealing materials affecting the improvement of mechanical properties of cement stones. The goal of this study was the analysis of the impact salt environment on changes technological parameters of cement stones in time. Cement stones samples were long-term seasoning (12 months)in the full saturated brine and technological properties were examined for a predetermined period of time. Interpretation of obtained results allows to identify appropriate cement slurries formulas with potential application in sealing of underground gas storage in salt cavern.

Developed and selected recipes thanks to proper rheological and mechanical parameters can be successfully used during such procedures. The aim of laboratory tests were to develop cement slurries based on fully saturated brine as mixing water that can be used during sealing the casings in salt layers.