

RESEARCH OF THE PHYSICAL AND MECHANICAL PROPERTIES OF MODIFIED SEROBETON

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Abstract. *This scientific article covers the strength properties of serobeton, the possibility of achieving economic efficiency as a result of modification of Sera raw materials, application of serobeton. Also indicated is the elimination of environmental problems as a result of the application of Sera raw materials in the preparation of concrete.*

Keywords: *Sera, serobeton, ecology, industrial waste, composite material, inert materials, fillers*

ИССЛЕДОВАНИЕ ФИЗИКО-МЕХАНИЧЕСКИХ СВОЙСТВ МОДИФИЦИРОВАННОГО СЕРОБЕТОНА

Аннотация. *В данной научной статье рассматриваются прочностные свойства серобетона, возможность достижения экономической эффективности в результате модификации сырья Сера, применения серобетона. Также указано устранение экологических проблем в результате применения сырья Сера при приготовлении бетона.*

Ключевые слова: *Сера, серобетон, экология, промышленные отходы, композиционный материал, инертные материалы, наполнители.*

INTRODUCTION

The disposal of Sera (sulfur) formed as a result of oil and gas processing on the territory of Uzbekistan is one of the environmental and technical and economic problems. Its volume increases from year to year, reaching several million tons. The environment is polluted as a result of the spread of dusty particles of Sera, reaching even long distances when there is wind. The production of building materials from such man-made waste allows you to avoid two important problems-environmental pollution, as well as achieve economic efficiency in the preparation of concrete. According to statistics, the Blessed gas processing combine is 3mln per year. produces more than tons of Sera. In the first half of 2021, 500mins of Sera raw materials were exported by the combine to 8 countries of the world. It should be noted that the reserves of Sera raw materials are sufficient for its application in the preparation of concrete and reinforced concrete products.

RESEARCH MATERIALS AND METHODOLOGY

Serobeton is an artificial composite material, which is the state of the serobeton mixture after mold. By composition, serobeton is considered a composite material, it consists of Sera,

inert fillers and catalyst. The inert materials applied in it are round. As Inert materials, Flint, sand metallurgical slag and other rocks are used. Large oil and gas companies are looking for new ways to use Sera. As a result, new developments for the production of concrete and its application will appear on the basis of the Sera binder. Studies prove the advantages of serobeton over Portland cement-based concrete. Therefore, in the conditions of Uzbekistan, the physical mechanical properties of serobeton based on local inert materials, Sera and industrial waste are studied, and its introduction into production is one of the main tasks in solving the problem.

RESULTS OF THE STUDY

To study this problem, cubic samples of three series with sides of 100x100x100mm were prepared. In the samples of the first Category, A Portland Cement was used as a binder, and the composition of the concrete was selected corresponding to the V15 class. In the samples of the second category, as a large filler, a 5-10mm fractional quicklime was used, quartz sand of Norin ka'eri as a fine filler, and Sera raw materials of Fergana oil refining combine were not modified in place of the binder. The amount of Sera was 25% in terms of the volume of materials applied to concrete. The difference between the samples of the third category from the samples of the second category was modified Sera raw materials using unsaturated hydrocarbon. In the process of making the serobeton, a mixture of concrete was prepared by heating to a temperature of 1300s and placed in molds by compacting it with a wire. All samples were stored in laboratory conditions. Concrete samples based on Portland cement of the first category were tested to strength in 2, 7, 14 and 28 days. And samples with Sera binders were tested for strength in terms of 3 hours, 12 hours, 24 hours, 48 hours and 28 days. All samples were prepared in August, and in the process of its preparation and storage, the ambient temperature was 20-290s, and the relative air humidity was 60-75%. The Portland cement Binder has achieved concrete maturity strength in 7 days. Sera binder non-modified concrete has achieved maturity strength in 3soat, and project strength in 12 hours. Modified serobeton samples, on the other hand, achieved maturity consistency in 3 hours and projective consistency in 24 hours. When testing Serobeton samples over a 24-hour period, it was found that the strength of unadjusted serobeton samples was on average 17-20% higher than that of modified samples. In the 48-day sinaovi of the samples, it was noted that the strength of the modified and non-modified serobetones is almost at the same indicators.

As a result of the 28-day test of samples of all categories, the minimum strength was recorded in concrete with Portland cement binder. It turned out that the strength of non-modified Sera-based concrete is 37-45% higher, facing the strength of portdantsement binder concrete. The strength of the modified Sera binder concrete is 1.8, which looks at the strength of the Portland binder concrete...It was found to be 1.9 times higher.

CONCLUSION

It is worth noting that unadjusted serobeton will have a higher strength than modified serobeton in the initial periods after the winter, and after 5-6 days its strength will begin to lag behind the musthkamity of the modified serobeton. Therefore, it is advisable to apply modified serobetones in concrete and reinforced concrete structures.

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