МЕТОДЫ ПОЛУЧЕНИЯ КОМПОЗИЦИОННЫХ АСФАЛЬТОБЕТОННЫХ МАТЕРИАЛОВ ДЛЯ ДОРОЖНЫХ ПОКРЫТИЙ

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Аннотация. *Несмотря на то, что Узбекистан после обретения независимости располагает достаточными сырьевыми ресурсами, в целях получения упругодеформационно-устойчивых асфальтобетонных материалов, улучшения состояния автомобильных дорог и развития дорожно-транспортной инфраструктуры, повышения качества и прочности асфальтобетонных материалов, повышения конкурентоспособности продукции, производимой с их использованием, были достигнуты определенные результаты. В этой связи большое значение имеет получение упругодеформационно-устойчивых асфальтобетонных композиционных материалов для дорожных покрытий путем физико-химической модификации органоминеральных компонентов на основе местного и вторичного сырья.*

Калит сўзлар. *Состав, асфальтобетон, щебень, песок, минеральные порошки, удельный вес.*

METHODS OF COMPOSITE ASPHALT CONCRETE MATERIALS FOR ROAD SURFACES

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Abstract. Despite the fact that Uzbekistan has sufficient raw material resources after gaining independence, scientific research has been conducted to obtain elastic-deformation-slip-resistant asphalt concrete materials, improve the condition of automobile roads and develop road transport infrastructure, increase the quality and strength of asphalt concrete materials, and increase the competitiveness of products manufactured using them, and certain results have been achieved. In this regard, the production of elastic-deformation-slip-resistant composite asphalt concrete materials for road pavements by physicochemical

modification of organomineral components based on local and secondary raw materials is of great importance.

Keywords. Composition, Asphaltobeton, crushed stone, sand, mineral powders, specific gravity.

Introduction. When calculating the composition of the mineral part of asphalt concrete, the weight ratios between crushed stone, sand and mineral powders are calculated based on the composition of their aggregates and the applicable purity standards, as derived from the aggregate composition. In cases where the difference in specific gravity is 0.20 g/cm3 or more, corrections are made to the coefficients d 1 /d 0 by increasing the amount of heavy and reducing the amount of light minerals, where d_0 is the specific gravity of the mineral material with the highest specific gravity in the mineral aggregate (gravel, sand); $d_1 - d_0$ 0.20 g/cm^3 and more is the compressive strength of the mineral material.

For example, the specific gravity of the material (gravel or sand) is $d_0 = 2.7$, and the specific gravity of the mineral powder is $d_1 = 2.9$. If the calculation requires 10% mineral powder, we take its actual density as (2.9/2.7)10 = 10.7%. Thus, the amount of the material or another material close to it in specific gravity is reduced by 0.7%.

Based on the actual porosity of the asphalt concrete sample obtained in the laboratory and the estimated residual porosity of the asphalt concrete after the application. The maximum amount of bitumen in asphalt concrete is calculated.

The bulk density of the sample and the specific gravity of the mineral fraction are determined, and the required amount of bitumen is calculated using the following formula:

$$Б = \frac{(v ¿¿ nop^0 - v_{nop}) \gamma_y}{\gamma_0} ¿ (1)$$

in this case, $\boldsymbol{v}^0_{pop}$ is the porosity of the tested minepal layer, %;

$^e{}_{pop}$ - residual porosity of asphalt concrete at +20 °C, %;

g_u - compressive strength of bitumen at +20 °C temperature, g/cm^3;

g_0 is the volume deviation of the tested sample of asphalt concrete, g/cm^3.

The bitumen scale is measured, the final coating is prepared and three samples are formed and the residual porosity is determined. As soon as it reaches the flaky (for asphalt concrete of this type and type) scale, one more bitumen coating is applied on the same scale. pattern is formed.

The approximate amount of bitumen in the asphalt concrete mixture was determined by pouring.

When the bitumen content is 5.2% (100% of the mineral fraction), the bulk density of the asphalt concrete sample taken for testing is 2.32 g/cm ^{3} ha, the specific gravity of the mineral fraction is 1.00 g/cm ^{3} ha, and the residual porosity of the asphalt concrete is 4.0%.

In this case:

$$g_0 = \mathbf{2,}\ 32\times100/(100+5.2) = 2.20\ g/cm^3;\ (2)$$

$$Б=\frac{(17,9-4,0)\,x\,1,0}{220}=6,3\,\%(3)$$

$$v^0_{пор}=¿).\ 100=17.9\ \%(4)$$

For the study, three samples with a final bitumen content of 6.3% were formed. It is recommended to prepare a mixture with the minimum and maximum permissible residual porosity when mixing the composition and test the first sample for strength at +50 °C, and the second sample for water resistance only after long-term water saturation (within 15 days). According to the results of this test, the limit of the bitumen layer composition in hot and warm asphalt-concrete mixture is finally determined.

Conclusion. During the investigation of the asphalt concrete minepal layer, it was found that the hardness of the sand, sand and minepal powder was increased.

Physico-chemical analysis and mechanical activation method of the organic mineral ingredient in local and secondary raw materials are described, and the method of determining the components of the composition is described. was brought.

A method for obtaining the composition of asphalt concrete and determining its physical-mechanical and operational characteristics was proposed.

A mathematical-tactical approach was used to process the results of the experimental research.

Refrences:

1. Солиев Р.Х., Д.И.Махкамов, Г.Ф.Валиева. Физико-механические свойства композиционных материалов, наполненных механоактивированными оргаминеральными ингредиентами.// "Мировая наука" №6/(15) 2018.-С-317-324

2. Makhkamov D.I., Negmatov S.S., N.S.Abed, R.X.Soliyev. Research of the properties of mechanically activated organic-mineral ingredients and elastic-deformation-shear-resistant composite asphalt concrete materials on their basis for highway coverings. universum № 8(125), часть-5, август, 2024 г. - С. 20-24.

3. Туляганова В.С., Абдуллаева Р.И., Негматов С.С., Туйчиева М.О., Шарипов Ф.Ф., Валиева Г.Ф. Исследование процесса спекаемости электрокерамических композиций. // Universum: технические науки. Выпуск: 10(91) Москва 2021. Часть 4. –С. 44-46.

4. Абдуллаева Р.И., Туляганова В.С., Негматов С.С., Пирматов Р.Х., Валиева Г.Ф.. Исследование керамико-технологических и диэлектрических свойств электрокерамических композиционных материалов на основе местного и вторичного сырья // Композиционные материалы, -Ташкент. 2022, №2, - С. 176-178.

5. Туляганова В.С, Абдуллаева Р.И., Негматов С.С., Валиева Г.Ф., Аззамова Ш.А., Тўйчиева М.О. Исследование процесса спекаемости и физико-механические свойства электрокерамических композиций. // Меж.НТК «Композиционные материалы на основе техногенных отходов и местного сырья: состав, свойства и применение». –Ташкент, 16-17 сентября 2021, -С. 140-142.

6. Туляганова В.С., Абдуллаева Р.И., Негматов С.С., Валиева Г.Ф., Туйчиева М.О., Умирова Н.О., Аззамова Ш.А. Исследование процесса фазообразования керамических композиционных материалов на основе местного сырья // Композиционные материалы, -Ташкент. 2021, №2, - С. 76-81.

7. Абдуллаева Р.И, Туляганова В.С, Негматов С.С, Валиева Г.Ф, Аззамова Ш.А. Ренгенографическое иследование процесса фазообразования опитных образцов композициионных электрокрамических масс, обборженных при различных температурах // Universum: технические науки. Выпуск: 6(99) Москва 2022. Часть 1. –С. 41-45.