

Empirický a aplikovaný výzkum



Technické vědy

UDC 66.002 8(5751)

SELECTING THE COMPOSITION WARM GOSSYPOL CONCRETE MIXTURE WITH GOSSYPOL PITCH (BY RUBBER) (TAR) (ROSIN)

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Summary. In this article the composition of warm gossypol concrete mixture with gossypol pitch and its physical and chemical qualities and components, its usage purposes in the Republic of Uzbekistan are discussed. Furthermore, gossypol with its qualities is close to bitumen and obviously it could be used as bitumen or with bitumen in gossypol concrete composition and in producing other materials. Together with the transition to a market economy of Uzbekistan, when the problem of the scarcity of imported raw materials increasingly affects the sphere of production, it is necessary to use local raw materials and waste products. So, this article mainly focuses on the above mentioned issues and its possible solutions.

Keywords: Bitumen; composition; gossypol concrete; positive temperature; resin; mineral powder; limestone; asphalt-concrete; three-dimensional.

Selecting the composition providing material given to factors, one of the most responsible problems to technologies production of asphalt concrete. Criteria while selecting the compositions of gossypol concrete are only those indexes, allowing approximate to judge about behavior of the material under high temperature of summer, as well as partly about its corrosion proof. In base of applicable at present methods lies the principle of the selecting the composition, asphalt concrete under positive temperature. But from consideration characteristic of gossypol concrete becomes clear that top strength

feature under positive temperature far from always corresponds to required deformability of this material under lowered temperature. Designing the composition of gossypol concrete on method Soyuz Dor NII is produced on following scheme, selection and test source material, selecting the correlations mineral material (crushed stone, sand, mineral powder) depending on their grain-size composition, determination optimum amount gossypol of the resin for selected mineral mixture, test checking sample.

Composition of gossypol concrete follows to design on base of the technical



requirement, in which are indicated type gossypol concrete, purpose and condition of the using, feature mineral and binding material.

Selection of structure which provides material specified parameters is one of the most important tasks of production technology. Criteria at selection of structure of gossypol concrete are only those parameters allowing approximately to judge about behavior of a material at high summer temperatures, and also partially about its corrosion stability. On the basis of using now methods lays the principle of selection of structure, asphalt-concrete at positive temperatures. But from consideration of properties gossypol concrete becomes clear, which to the best strengthening to the characteristics at positive temperatures not always correspond necessary deformation ability of this material at the lowered temperatures [1]. The designing of structure gossypol concrete on a method of SDNII is made under the following circuit: selection and test of initial materials: selection of ratio of mineral materials (road metal, sand, mineral powder) depending on them grain-size of structure: definition of optimum amount gossypol resin for the picked up mineral mix: test of control samples [2]. The structure gossypol concrete should be projected on the basis of the technical project, in which it are specified a type gossypol concrete, purpose and conditions of application, characteristic of mineral and knitting materials.

At selection of structure it is necessary to pay the special attention to use of the local checked up materials lowering cost of asphalt-concrete. [3] Initial materials selected depending on a type and purpose gossypol concrete. The special attention thus should be paid that the chosen materials provided not only good parameters of mechanical durability, but also sufficient heat and corrosion stability gossypol concrete. All used initial materials have tested according to GOST (State Standard). Their final suitability establishes by re-

sults of tests skilled gossypol concrete of mixes. A mix of mineral materials selected so that she had optimum density. For the data grain-size of structure of available mineral materials by a settlement way selected a mix, which structure was in limits specified in the GOST. Grain-size structure of a mix is represented graphically. Received curve was smooth, without sharp crises and was stacked between limiting curves of optimum density. If the curve satisfies to these requirements, the picked up mix checked by practical consideration. Volume weight of matching mineral mix was greatest.

At definition of optimum quantity gossypol resin for detailed gossypol concrete of a mix four mixes with the different contents gossypol resin nominated in limits, specified in the appropriate to GOST (with an interval 0,5 %) prepared.

Mineral material previously dried and heated up to temperature 1600C, and gossypol resin desiccated by evaporation and heating to same temperature.

From the received mixes made standard cylindrical samples for tests. For each mix was defined volume of water saturation and resistance to compression at temperatures 50 and 20°C.

The quantity of gossypol resin contained in a mix, which has the best results of tests and which appropriate to the technical requirements, is considered optimal. After an establishment of optimum quantity gossypol resin from the chosen mix control samples prepared, subjecting their all-round tests, according to the requirements of GOST. On the basis of results of tests have established final structure gossypol concrete and its conformity to the technical project.

The selection of a mineral part of gossypol concrete on curves of optimum density enables quickly to define suitability of a material on grain-size to structure. It allows considerably speeding up the process of selection at the expense of reduction of number of laboratory tests. At selection of



structure gossypol concrete alongside with technical it is necessary to take into account and economic parameters.

The picked up structure is necessary for modifying on gossypol concrete factory depending on features of hashing of a mix in used amalgamators. During preparation of gossypol concrete mix the established structure is necessary also to correct depending on features of used materials and results of the current tests of samples. A technique of selection of structure cold gossypol concrete same, as for mixes used in a warm condition. Grain-size the structure is selected according to the requirements of GOST. In this case as a reason of smaller viscosity with gossypol resin of amount of fine fractions (particles of 0,071 mm) larger than in mixes used in a condition. For reception of a covering having the sufficient roughness, recommends in a mix 40–50 % of particles of firm crystal breeds.

At use crushed limestone the additive of sand or granite of seed enables to vary in selection grain-size of structure of a mix. The lack of a mix of particles more finely 0,071 mm is compensated by a mineral powder.

The optimal quantity of GR for cold gossypol concrete is defined not only proceeding from reception necessary physical-mechanical parameters, but also from a condition of reception of a mix capable to remain long time in a friable condition. As it was already specified, mixes having this property and being at the same time steady enough in a covering, should contain gossypol resin on 20 % less quantities appropriate to the maximal durability of samples on compression.

When selecting the composition it is necessary to pay earnest heed on use local checked materials, that reducing the cost of the asphalt concrete. Source material selected depending on type and purposes of gossypol concrete, Emphases under this follows to include this chosen material supplied not only good indicators to mechanical toughness, but also sufficient heat

and corrosion stability of gossypol concrete. All applicable source material tested in accordance with acting GOST's. Final their fitness installs on the result of the test experienced gossypol concrete mixtures, Mixture mineral material selected so as it had optimum density, As of grain-size composition consisting mineral materials by accounting way selected mixture, which composition was within, mentioned in GOST, Grain-size composition mixture is expressed graphic. Have gotten graph was fluent, without cutting fracture and packed between limiting crooked optimum density. If curve satisfies these requirements that selected mixture checked by practical consideration. Three-dimensional mass selected mineral mixture was most.

At determination optimal amount of gossypol by resin for detailed gossypol concrete mixture prepared four mixtures with miscellaneous by contents gossypol-resins assignable in redistribution, specified in corresponding to GOST (with interval 0,5 %). Mineral material beforehand dried and warmed before the temperature 160°C, but gossypol resin dehydrated by evaporations and heating before the same temperature.

From obtained mixtures prepared the standard cylindrical sample for test. For each mixture was defined three-dimensional water saturating and resistance compression at temperature 50 and 20°C.

Amount of gossypol resins, kept in mixture, which has a best result of the test, corresponding to specifications, considered optimum, after determination optimum amount gossypol resin from chosen mixture prepared checking sample, subjecting to their all-round test, according to requirements GOST. On the ground of results of the tests have installed final composition of gossypol concrete and its correspondence to technical requirement.

Selecting the materiel of gossypol concrete on crooked optimum density enables quickly to define fitness of the material on grain-size composition. That allows vastly



accelerating process selection to account of the reduction of the numbers of laboratory tests. When selecting the composition of gossypol concrete alongside with technical necessary the economic indicators are also should taken into account.

Selected composition required the correction at gossypol concrete plant depending on particularities blending mixture in utilized mixer, In process of the preparation of gossypol mixture it is necessary also to correct stated composition depending on particularities applicable material and result of the current test sample. Methods of the selecting the composition cool gossypol concrete same, as for mixtures, applicable in heat condition. Grain-size composition having selected in accordance with requirements of GOST. In this instance, relationship with smaller viscosity and gossypol by resin amount small faction (particles 0,071 mms) provided big, than in mixture, applicable in conditions. For reception of the cover, possessing sufficient roughness, is recommended in mixture 40–50 % particles of the hard crystalline sorts.

When use crushed limestone additive of sand or granite seeding gives the opportunity of modifying in selection of

grain-size composition mixture. Defect in mixture of the particles small 0,071 mms having compensated with mineral powder.

Optimum amount GS for cool gossypol concrete is defined not only coming from reception necessary physic-mechanical indicators, but also from condition of the reception mixture, capable to remain long time in friable condition. As already mentioned, the mixture, possessing this characteristic and appearing in ditto time it is enough firm in covering, must contain gossypol resin on 20 % amount less, corresponding to maximum toughness sample on compression.

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