Spectrum Journal of Innovation, Reforms and Development
Volume 09, Nov., 2022 ISSN (E): 2751-1731
Website: www.sjird.journalspark.org

APPLICATION OF FACTORS TO INCREASE THE DURABILITY OF MODIFIED ASPHALT CONCRETE

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Abstract
This article shows the application of durability improvement of modified asphalt concrete made from "Kraton D1186" polymers and the addition of SFM "SP-OEP" surface-forming additives during long-term water saturation, which is influenced by the main parameters of asphalt concrete related to frost, corrosion and cracking resistance. passed.

Keywords: temperature, corrosion, humidity, crack resistance, freezing, water resistance, strength, bitumen, chemical analysis, mineral materials.

In all countries of the world, special attention is paid to the development of the road construction industry, and 90-94% of passengers and goods of the national economy are delivered to their destinations through these roads. In developed countries, including the USA, European and Asian countries, special importance is attached to increasing the level of dynamic deformation, freezing and corrosion tolerance of asphalt concrete pavements operated in different natural climates that meet modern requirements that improve the quality and technical condition of roads.

According to the analysis, new modern technologies of bitumen production are limited in the conditions of Uzbekistan. The relationship between the structure and properties of asphalt concrete pavements and their performance has been little studied. in the study of this issue, the scientific works of scientists in the field were studied [1-4].

Water resistance during long-term water saturation is one of the main properties associated with asphalt concrete's resistance to cold, corrosion, cracking. The resulting water, as well as freezing and the increase in the volume of asphalt concrete pores, lead to the removal of bitumen films from the surface of mineral materials, the emergence of internal stresses. As a result, the strength decreases and the destruction of asphalt-concrete coatings is accelerated. It is most suitable to increase water resistance by increasing the strength of adhesion of bitumen layers to the surface of mineral particles of asphalt concrete.

Due to the insufficient adhesion of bitumen to the surface of mineral particles, water enters the pores of asphalt concrete through the defects in the mineral grains and peels off the bitumen film from the surface, which leads to the weakening of structural bonds and facilitates its destruction. Adhesion of bitumen to the surface of mineral materials, which reduces water resistance during long-term saturation of asphalt concrete with water, is increased by adding structural additive SFM "SP-OEP". It increases the adhesion and cohesion of bitumen to mineral materials, and thereby increases the water resistance of asphalt concrete [5,6].

A significant increase in heat resistance and water and cold resistance of asphalt concrete requires the use of high-quality modified bitumen. For this reason, detailed studies on increasing heat, water and frost resistance of asphalt concrete using Kraton D1186 polymers and addition of SFM "SP-OEP" surface-forming additives are of great interest [6,7].

Figure 1 shows the dependence of the water resistance of asphalt concrete based on "Kraton D1186" polymers during long-term water saturation on the amount of SFM "SP-OEP" additive. As can be seen from the figure, with the combined use of polymers and structural additives, water resistance from 10 to 18% and with long-term saturated water from 15 to 23%, as well as a significant improvement was observed when using Kraton D1186 polymers.

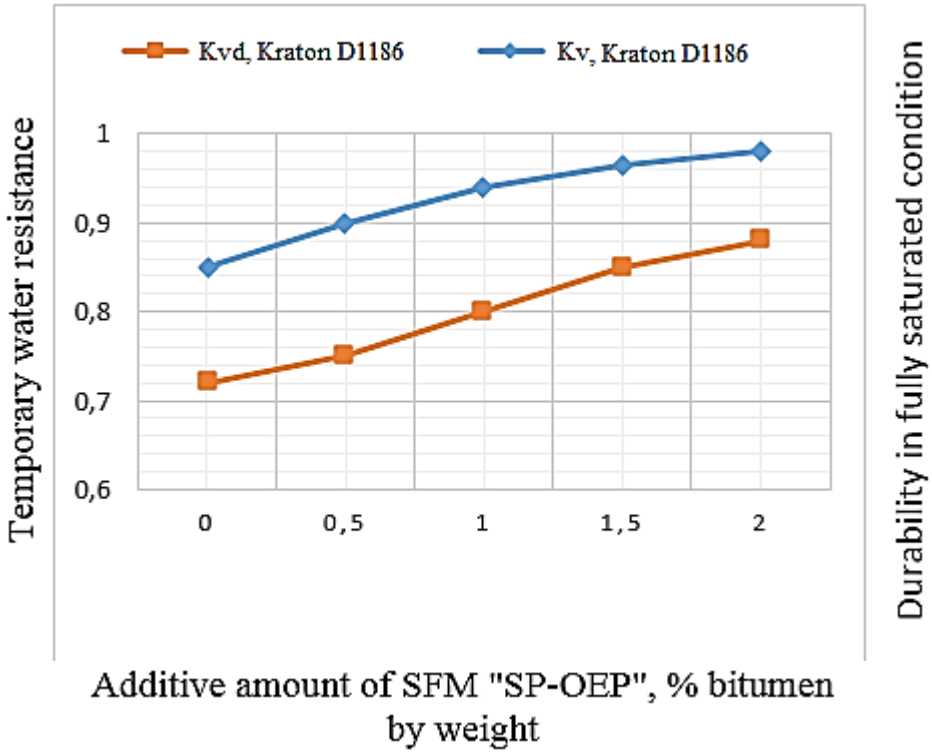

Figure 1. Dependence of water resistance (Kv) with long-term water saturation (Kvd) of modified asphalt concrete and the amount of "SP-OEP" SFMsi additive.

The study of the effect of the recommended additions of polymers and SFMs on the water resistance of asphalt concrete during long-term water saturation showed that the results primarily increase its effect on the properties of bitumen, improve its adhesion to basic and acidic rocks, increase its cohesion and flexibility, reduce its temperature, frost resistance, corrosion helps to increase durability and crack resistance of asphalt concrete pavements [7,8]. One of the important indicators is the ability of asphalt concrete to resist the appearance of cracks under the influence of climatic factors and traffic load. Preparation and testing of sample asphalt concrete was carried out in accordance with GOST 12801. Cracking resistance of asphalt concrete using polymers and their effectiveness have been proven in the research of many scientists. Kraton D1186, and the addition of structure-forming additives SFM "SP-

OEP" are of great interest in research on increasing the cracking resistance of asphalt concrete [9,10].

The results of the study of the effect of the recommended polymer additives on the cracking resistance of asphalt concrete when testing samples depending on the amount of "SP-OEP" SFMsi showed that the effect of polymers on bitumen properties and adhesion to mineral substances was improved. An increase in viscosity and, accordingly, a decrease in bonding strength, a decrease in the fracture temperature of bitumen is associated with the effect of the recommended SFMs additives.

The cracking resistance of asphalt concrete based on Kraton D1186 polymers depends on the amount of added SP-OEP SFMsi. With the combined use of polymers, the structural additive "SP-OEP" SFMsi also helps to increase the crack resistance by 20 to 25%.

This means that the plastic properties of bitumen are preserved and its brittleness decreases. A slight change in the softening temperature during thermostating of bitumen modified with structural additives is explained by the significant preservation of the composition of the oily part, which was shown in the group chemical analysis of the compositions [11,12].

The study of the effect of the recommended additions of polymers and SFMs on the water resistance of asphalt concrete during long-term water saturation showed that the results primarily increase its effect on the properties of bitumen, improve its adhesion to basic and acidic rocks, increase its cohesion and flexibility, reduce its temperature, frost resistance, corrosion helps to increase durability and crack resistance of asphalt concrete pavements.

The above studies show that the addition of "SP-OEP" SFM from Kraton D1186 polymer to the bitumen composition leads to the addition of individual effects from each additive, which is consistent with our theoretical concepts. We can see that the structure and properties of modified bitumen are correlated with the performance of high positive temperature asphalt concrete pavements, providing low temperature cracking resistance and corrosion, water resistance.

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