European Journal of Emerging Technology and Discoveries
ISSN (E): 2938-3617
Volume 4, Issue 4, April - 2026

THE IMPORTANCE OF MODERN TECHNOLOGIES IN INCREASING THE EXPLOITATION LIFE OF ASPHALTIC CONCRETE COATINGS

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Abstract
This article states that asphalt concrete pavement is one of the main building elements that holds a significant place in road construction. It contains a statement about the problems and shortcomings that have been deeply analyzed. In addition, the article analyzes binders that affect the service life of asphalt-concrete roads, namely mineral powders, asphalt concrete methods for obtaining mineral powder, increasing the durability of paved roads, improving the quality of road bitumen for asphalt concrete mixtures from carbon limestone, increasing the strength of asphalt concrete pavement, enrichment of the bitumen composition and analysis of the physical and mechanical properties of asphalt concrete, as well as the influence of external factors and heavy the influence of loads from freight vehicles on the asphalt concrete pavement was studied. As a result, several solutions and guidelines for the following studies are considered.

Keywords: Asphalt concrete pavement, mineral powder, carbon limestone, GOST, Marshal method, strength indicators, polymers, stress.

Introduction

Today, in order to increase the service life of highways in our republic, a number of reforms are being carried out to carry out work on the construction of highways with high strength and the effective use of available local raw materials. In accordance with the tasks of the Action Strategy on five priority areas of a healthy competitive environment through the creation of a modern road management system, clear delineation of control and economic functions, demonopolization, attraction of private sector enterprises, and increasing investment attractiveness, the Decree of the President of the Republic of Uzbekistan "On Measures for Deep Reform of the Road Management System of the Republic of Uzbekistan" and the Resolution "On Measures to Improve the Road Management System" were adopted on December 9, 2019. Therefore, the demand for asphalt concrete pavements with high strength and a long service life is increasing. In order to ensure the service life of existing asphalt-

concrete roads in the republic and roads planned for construction in the future, it is necessary to improve the technologies for their maintenance in the natural, climatic, and operational conditions characteristic of our republic. Binder-forming mineral powders with bitumen in asphalt concrete. The study of new types has great theoretical and practical significance, since the specific properties of these materials give new properties to the organomineral structure.

Mineral powder, together with organic binder, is an important component that significantly affects the physical and mechanical properties of asphalt concrete. It is known that asphalt concrete pavement deteriorates intensively, especially during periods of high air temperatures, during sharp changes in temperature and humidity in spring, as well as during the melting of frozen layers. Such failures, usually observed in spring, are associated with the high water permeability and low compressive strength of asphalt concrete [1].

In recent years, climate change and a sharp increase in the level of motorization in cities have led to an increase in external forces affecting road surfaces. This, in turn, causes various damage to road surfaces, negatively affecting road quality indicators and safe movement [2]. Climate change and a sharp increase in the level of motorization in cities lead to an increase in external forces affecting road surfaces. This, in turn, causes various damage to road surfaces, negatively affecting road quality indicators and safe movement.

Methods:

The study of the influence of mineral powders on the physical and mechanical properties of asphalt concrete mixtures was carried out by many researchers Korotaev A.P., Kopilov V.E., Burenina M.E., Qianli Gu., Kong., Tibebu Birega., Sofia G.G., and others.

Mineral powder forms a bond between the aggregate and the binding materials in the asphalt concrete mixture. That is, the mineral powder added to the asphalt concrete mixture increases the density of the mixture, increases its water absorption, water resistance, and binding activity, improves it, and increases the viscosity and strength of the mineral part of the mixture [1].

Purpose of mineral powder:

- increases the strength of the mineral part by filling the pores of the sand-gravel mixture;
- converts petroleum bitumen into asphalt binder. Mineral powders added in the preparation of fine-grained asphalt concrete mixtures are used for crushing limestone crushed stone, industrial production waste, rocks, and dolomites. Through GOST 16557-2005 — "Mineral powder for asphalt-concrete and "organomineral mixtures," that is, the granular composition by the degree of grinding exceeds the 0.71 mm sieve by 70%, the swelling of the sample with a mixture of mineral powder and bitumen by 2.5, porosity by at least 35%, moisture content by 1.0%. [3].

Result:

The conducted research showed that the quality of the asphalt binder is characterized by structural-mechanical properties and resistance to external influences, as well as to temperature and water.

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Physical composition of asphalt concrete mix with the addition of mineral powder comparison of properties Table 1.

№	Index name	Unit of measurement	Indicators GOST 9128-13 Request for	Received value
1	Medium density	g/sm^3	Non standardized	2.35
2	Compressive strength 200	MPA	2,5	4.08
3	Compressive strength 500	MPA	1.1	1.2
4	Water resistance		Minimum 0.85	0.96
5	Compound conjunction quantity	%	5.0-6.0	5.2
6	Water absorption	%	1.0-4.0	2.54

It was established that the above table 1 refers to the processes of interaction between the mineral surface and organic binders. The type of formed bonds, the degree of properties of composite materials, and their stability during use were determined. By increasing the structure-forming ability of mineral powders, targeted regulation of the technological and construction-technical properties of asphalt concrete mixtures and asphalt concrete was achieved [3].

Mineral powders in the composition of asphalt concrete mix have a great influence on increasing the service life of roads. Therefore, their study is important for eliminating defects arising in the coating during operation. This reduces operating costs [4].

Hot asphalt concrete pavement with the addition of mineral powder from carbon limestone achieves the following positive results. The mineral powder added to asphalt concrete primarily affects the chemical and mineralogical composition of the bitumen. Improves the properties of bitumen, ensuring strong adhesion with fillers. Mineral powder for asphalt concrete mixtures is made mainly of carbonate natural stone materials, as well as shale, dolomite, by crushing stone materials, such as diabase [5]. Based on the experience of many scientists and specialists, we are conducting experiments on carbon limestone, mined by blasting and used in the construction of highway foundations. Using carbon limestone, we can achieve the following:

The service life of the road surface will be extended by at least 3 years. The physical and mechanical properties of asphalt concrete pavement increase. The costs of repair and maintenance of highways will be reduced. Main properties of road bitumens (elasticity, softening temperature, The needle penetration depth (penetration), viscosity) increases and fully complies with the requirements of the regulatory document GOST 22245-90. The negative impact of asphalt concrete workshops (ABS) waste on the environment will be significantly reduced [6].

Discussion:

The maintenance and reconstruction processes of our roads require significant economic expenses. Studies of the composition of asphalt concrete have shown that the majority of manufactured road bitumen products have heat resistance properties. Low quality, inadequate crack resistance at low temperatures, and poor adhesion properties lead to poor-quality laying, rapid deterioration, and rapid deterioration of many asphalt concrete pavements in rapidly changing climatic conditions. to prevent these defects, we must implement innovative

technologies to ensure all our asphalt concrete roads are durable and long-lasting. therefore, the physical and mechanical properties of the mineral powder obtained from carbon limestone must be thoroughly studied. We determined the process of powder shrinkage with bitumen, the ductility of bitumen with the addition of mineral powder, the softening temperature, and its longevity.

Conclusion:

To increase the service life of asphalt concrete pavement, it is necessary to apply solutions based on the above analysis. According to the presented proposals, we can extend the pavement's service life by promptly addressing defects in asphalt concrete pavements, strengthening weight control measures on roads, and temporarily restricting the movement of heavy trucks on asphalt concrete pavements during hot weather conditions[7].

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