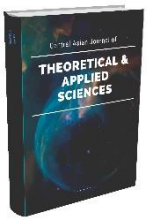

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Improving the Technology for Uzbekistan's Automobile Roads to Increase the Strength of Cement Concrete Coatings

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Abstract: *This article discusses issues such as cement concrete preparation technology, microcirculation, bitumen, portland cement, cement, sand, gravel, concrete, cement concrete, limestone, cement concrete brand, cement concrete elasticity, coating temperature shock, cement concrete improvement and use, and advantages and technology of cement concrete coatings.*

Keywords: *elastic, interest, import, export, cone, gravel, concrete, cement concrete, coating, asphalt concrete, limestone, brand, powder, sand, bitumen, local.*

Introduction

Due to a shortage of road bitumen in our country, bitumen is currently being imported from Turkmenistan, Kazakhstan, and Russia, which has an effect on the state of the roads in our country. In the production of construction cement, our nation is a global leader. Our cement-concrete roads are affordable and use locally produced cement if we consider that limestone, sand, and gravel are available resources in our nation. Also, on October 2, 2019, President Sh.M. Mirziyoyev, at the meeting selector dedicated to the development of the road industry and the wide attraction of investments in this field, said that in the construction of highways, it is necessary to gradually switch to roads with cement concrete coating. , on the basis of international standards, the task of construction, reconstruction and capital repair of highways with the introduction of innovative technologies has been set. [1.2]

Methodology

The article was written using comparative analysis, the study of foreign experiences and their nationalization, the investigation of technological possibilities and field orientation, rationality, and generalization.

It is well known that the main problem with cement concrete roads is their high construction costs. However, even though they are 15-20% more expensive to build, cement concrete roads have a longer service life and cost less to maintain. The technical complexity involved in producing cement concrete and the high price of Portland cement are the causes of this. They found that the operational costs of cement concrete and asphalt concrete roads equalized after about five years. Within 100 years, cement concrete becomes stronger, allowing our cement concrete roads to last 50 years with minimal maintenance. [3]

The need for road construction materials is growing, particularly for the production of goods with high economic efficiency that meet modern requirements, as Uzbekistan switches from asphalt to cement concrete pavements in its road construction projects. The following factors contribute to the poor condition of our cement concrete roads today: portland cement imports; technical challenges in construction; a lack of specialists; weather-related deterioration; a lack of elasticity in cement concrete; and our roads' cracking and crumbling [4]. The following works are carried out as part of the concrete pavement repair process today and are listed in the estimate. In comparison to cement concrete, the process of repairing our roads made of asphalt concrete is more difficult, according to the findings of our scientific research. [5].

Result

To fix the current issue with our cement concrete roads, I used micro-crimson. The use of micro-crimson in the creation of premium cement concrete coatings that adhere to environmental, elastic, temperature, and technological requirements is particularly noteworthy. The primary raw materials for the production of this mixture (95%) come from our nation's limestone, sand, gravel, and limestone [6]. However, the connecting element, Portland cement, is imported from abroad. (Russia, Germany and China). The concrete mixture created in our nation by incorporating micro-crimson powder to the cement gives an economic effect in order to address this issue [6]. The addition of microcrimson increases the elasticity of cement concrete roads, their tolerance to temperature changes, and their water resistance. It should be noted that the micro-crimson-infused coating achieves the same outcome as the Portland cement-infused coating [7]. (Table 1)

Table 1

Name	Sinking of the cone, cm	3 days			7 days			28 days		
		kgf/sm²	Mpa	class	kgf/sm²	Mpa	Class	kgf/sm²	Mpa	class
Control (cement-425 kg)	3,5	273,3	26,8	21,4	350,5	34,4	27,5	356,1	34,9	27,9
Main (cement -360 kg, microsilica - 10%) Frost resistance	3,5	184,1	18	14,4	266	26,1	20,8	381,6	37,4	29,9
Main (cement - 360 kg, microsilica - 10%)	1,5	195,5	19,2	15,3	286,7	28,1	22,5	425,5	41,7	33,4
Main (cement - 320 kg, microsilica - 10%)	2,0	180,0	17,7	14,1	253,9	24,9	19,9	372,2	36,5	29,2
Main (cement - 425 kg, microsilica - 10%)	3,6	166,2	16,3	13,0	255,5	25,1	20,0	358,8	35,2	28,1

Starting the production of cement-concrete mixture using local cement and adding micro-crimson will benefit our economy by saving a significant amount of foreign currency and reduce the amount of imports needed by the road construction sector. It presents opportunities to put into practice the work being done in the road sector right now and to cut costs. [8].

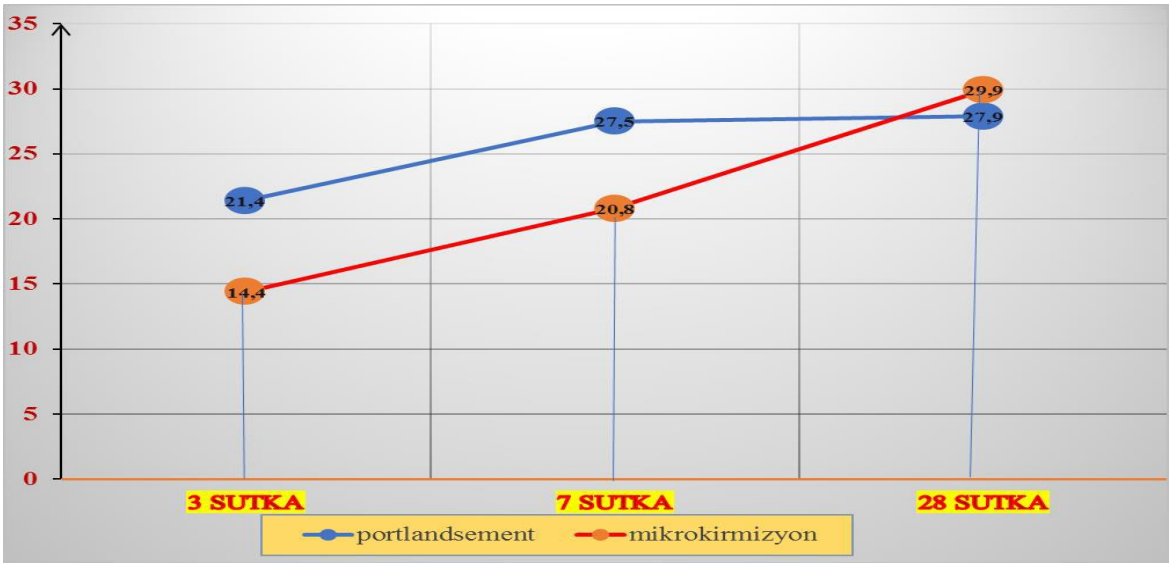

Figure 2. Hardening speed of Portland cement

The diagram shows that the rate of hardening of Portland cement is high, but we can see that our cement concrete made of local cement with the addition of micro-crimson has a high strength in just 28 days.

Conclusion

Therefore, lowering the portland cement import requires blending micro-crimson into the cement made in our nation and creating a premium mixture for the highway. Limestone, sand, gravel, and limestone are the primary sources of raw materials for the production of this mixture in our nation, which is a guarantee of economic effectiveness. In addition to having a positive impact on our nation's economy, the use of micro-crimson powder creates opportunities for export and the building of cement-concrete roads abroad. The advantages listed below can be attained if we use micro-crimson to construct cement-concrete coatings:

- Increase in elasticity of cement concrete coating;
- Increases resistance to cold;
- Water permeability increases by 50%, sulfate resistance by 100%;
- Saves up to 40% of cement;
- Increasing the service life of cement concrete roads;
- Increase in economic efficiency.

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