

# RESEARCH ON THE DEVELOPMENT OF INNOVATIVE BITUMEN-BASED CARGOSFALT PRODUCTS IN ORDER TO EXTEND THE LIFE OF ROAD INFRASTRUCTURE WORKS MADE FROM ASPHALT MIXTURES OR CEMENT CONCRETE

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**Rezumat.** *Expunerea la elemente naturale, cum ar fi radiațiile ultraviolete, umiditatea, acizii și soluțiile salină produc o succesiune de modificări chimice în compoziția asfaltului, în special în procesul de oxidare care duc la pierderea elasticității și a proprietăților adezive. Produsele prezentate sunt realizate pe bază de bitum, modificat cu un compus polimeric, având rolul de a prelungi durata de viață a drumului cu cel puțin 3 până la 5 ani de la aplicare. Materialele previn oxidarea suprafeței și descompunerea superficială prin blocarea apariției microfisurilor, cauzate de apă, eroziune precum și de deteriorarea drumurilor. Produsele sunt ușor de aplicat și oferă o soluție economică pentru întreținerea drumurilor.*

**Abstract.** *Exposure to natural elements such as ultraviolet radiation, moisture, acids and saline solutions produces a succession of chemical changes in the composition of asphalt, especially in the oxidation process leading to the loss of elasticity and adhesive properties. The presented products are made on the basis of bitumen, modified with a polymer compound, with the purpose of extending the life of the road by at least 3 to 5 years from application. The materials prevent surface oxidation and surface decomposition by blocking the appearance of microcracks, caused by water, erosion and road damage. The products are easy to apply and offer an economical solution for road maintenance.*

**Keywords:** Road infrastructure, Bitumen treatment, Asphalt mixture, Concrete

## 1. Introduction

Asphalt is the most used material for covering roadways. During exploitation, asphalt is subjected to natural factors such as ultraviolet radiation, moisture, acids and saline solutions, which over time produce chemical changes in its composition, more precisely in the oxidation process leading to loss of elasticity and initial properties. The result of wear over time is the appearance of microcracks, through which degenerative factors penetrate into the depth of the mixture, leading to a continuous corrosion process. As a result, alveoli appear, which turn into pits, the development of which eventually leads to the destruction of the entire asphalt carpet and at the same time cause damage to the means of transport that go through the road, as well as the disruption of traffic. [1]

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