

## **Estimation of bitumen adhesion to the mineral material on the basis of its wetting properties**

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### **Abstract**

© Research India Publications. Wetting and adhesive properties are essential characteristics of bitumen as they exert determining effect on performance of composite materials on the basis thereof, for example, bitumen-concrete mixes. As a consequence, ability of bitumen to wet the mineral material surface to the fullest extent is the necessary condition for asphalt pavement durability. As is known, wetting depends on the nature of the contacting phases. On the basis of the concept of non-classic cationic surface-active agents the new adhesive additive 'Adhesoline' for bitumen modification that allows improving bitumen adhesion to the mineral materials surface has been developed. The paper presents experimental data on identification of bitumen wetting properties in respect of the mineral material surface. It was established that the adhesive additive 'Adhesoline' promotes to better wetting of the mineral material surface with the modified bitumen. At the same time the contact wetting angle  $\theta$  is reduced, the spreading coefficient with the maximum by dosing 0,8% wt. is increased, cohesion function is decreased. Also, growth of relative adhesion function  $Z_a$  the values of which approximate to one is observed. Therefore, cohesive forces between bitumen and mineral materials approximate in their magnitude to the cohesive forces of bitumen itself which promotes to formation of material with homogenous defectless structure.

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### **Keywords**

Adhesion, Bitumen, Mineral material, Wetting