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Process modeling and experimental verification of the conditions of ice coverage destruction of automobile roads (Article) (Открытый доступ)

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The issue of improving the traffic safety level on roads in winter at subzero temperatures is relevant and inextricably linked to the problem of increasing the adhesion coefficient of vehicles wheels or pedestrian shoes with the road surface. To solve the problem of road slippery in winter and remove thin ice from their bearing surface without damaging the top layer of the road surface, the ice-picker developed by the authors of this article has a low energy content. However, the ice is a fragile material and prickle well, and the pavement remains intact, since the impact force of a spherical hammer (striker) is not enough to exceed the strength and destruction of the pavement. The interest in the tasks of the ice destruction by its shock loading is caused by the presence of its huge amount on our roads and urban areas. The article presents an analysis of the working capacity of the working body of an ice-cutting machine with spherical strikes and the calculation and modeling of the basic parameters characterizing the work efficiency by the finite element method. Validation and comparison of the experimental data obtained during the testing of full-scale samples of a special working body of percussion with the computer simulation results of the dynamic penetration of a spherical into the ice surface of an asphalt concrete road surface was carried. © 2019 Journal of Global Pharma Technology. All rights reserved.