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THEORETICAL REPRESENTATIONS ABOUT DESTRUCTION OF METAL LAYERS WITH VARIABLE COMPOSITION AND PROPERTIES

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Most of machines (85-90%) fail because of wear of parts. The complexity of repair and technical service of many road and construction vehicles, their service life is about 15 times higher than the manufacture of new ones [1]. The unevenness of fracture over area is the feature of many contact surfaces' friction. As a solution to this problem, the formation of layers of variable composition and properties by arc surfacing was proposed [2,3,4]. In scientific works, views regarding the nature and course of wear of both the directly contact surfaces of parts [5] and metal layers formed by arc surfacing with various orientations of deposited beads have been formulated [6]. But there is no understanding of destruction process of surfaces with variable composition and properties.

Considering this, this, it was decided to simulate destruction case of two metal surfaces with variable composition and properties under dry friction. Providing variable composition and properties within the same surface, zones of different hardness and zones of different phase composition can alternate. To provide variable composition and properties within the same surface, zones of different hardness and zones of different phase composition can be alternated. The orientation of such zones can be transverse or longitudinal to the rotation of the bodies that are wearing.

In all cases the products of destruction will be pushed by the direction of destruction. However, if in the case of lateral orientation products will accumulate between zones of higher hardness, then in the case of longitudinal orientation, they will most often fall off from the surface. But if during transverse orientation products will accumulate between zones of higher hardness, then during longitudinal orientation, they will most often crumble from the surface.

The process of friction of surface with longitudinally alternated components with different wear resistance is an exception. Despite the specifics of the surface configuration, products of sticking will be localized in more loaded areas [1].

From orientation on the contact surfaces of zones of different wear resistance, control of the transport of fracture products depending on the orientation of the differentiated zones, preventing adhesion bonds and, as a result, tearing metal due to the transverse rotation of the orientation of the zones of increased hardness are expected.

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