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Increasing Wear Resistance of Sliding Support Properties Made of Cast Iron

Sliding bearings which are mainly limited link of machine operation are widely used in machine building. They should meet the following requirements: to possess low coefficient of friction, to withstand great stress load, to have good damp capabilities, to have good conformability which guarantee high wear resistance ,to exclude surface solidification.

Various materials such as bronze and cast iron are used in bearing parts. Bronze of various chemical compositions better meets these requirements. Bronze application is limited by its high cost and it can be efficiently used only in conditions of liquid friction. Therefore, application of antifriction cast iron instead of bronze is an alternative variant .

Antifriction properties of cast iron depend on the shape and distribution of graphite constituents. Graphite impurities can be considered as a structure cavities. Stresses are concentrated near these cavities while loading. Graphite of plate-like shape weakens metal. Flaked graphite shape is more preferable for mechanical properties of cast iron and spherical shape is an optimal one. It is possible to obtain this or that structure by thermal treatment.

While cast iron operation in friction pair “bearing-axis” graphite performs double function. Being unstable component of cast iron structure it reduces resistance of friction forces and as a product of wearing it is used as grease. It is pointed out that with the same content of graphite cast iron wearing increases with reducing size of graphite impurities.

Having considered antifriction materials used in machine building industry and requirements imposed to them and basing on the fact that properties of cast iron and bronze according to study are close, it is offered to apply cast iron as antifriction material of sliding support.

Methods of creation and treatment of iron casting enabled to approximate working characteristic of cast iron bearing to characteristic of bronze sliding support.

The main disadvantage of cast iron materials is bad conformability. It is offered to remove it by applying bronze macrolayer on the surface of bearing friction.

Practice shows that sample wearing is reduced to 15 times after applying bronze coating. It is recommended to obtain iron casting with increased material density by centrifugal method.