METHOD FOR APPLYING A HIGH-TEMPERATURE LUBRICANT

The present invention relates to a method for applying a high-temperature lubricant onto the surface of a component of a vacuum coating source.

Lubricants are a widely used means for reducing the mechanical wear and tear of components rubbing against each other. In this respect, it is also known that the lubricants must be adapted to environmental conditions. A lubricant that is used in a vacuum coating chamber must be vacuum-compatible. For example, molybdenum disulfide (MoS_2) can be used. A lubricant that is to be used in an environment with high temperatures must be able to withstand these temperatures. MoS_2 can however be used only up to a temperature of 450° C. For higher temperatures up to 1200° C., hexagonal boron nitride (hBN), also known as inorganic or white graphite, is suitable.

Usually, the lubricants that are to be applied are sprayed or brushed onto the surface to be treated. When spraying, a liquid (e.g. alcohol) in which lubricant particles are suspended is used as base material. When brushing, a fine powder made of lubricant particles is used. Both are easy and cost-effective known methods. These methods work well in the case of MoS_2, as this material is sufficiently soft and adheres to the rough surface. This however does not apply to hBN. If hBN is sprayed or brushed onto a rough surface, it essentially lies loosely on the surface and can be easily wiped off. Sprayed or brushed boron nitride layers must therefore be renewed frequently if one does not wish to risk seeing the parts that rub one another becoming quickly worn and broken.

There is therefore a need for a method that allows for hexagonal boron nitride (hBN) to be applied adhesively onto a rough surface in an easy manner in such a way that essential components of the applied boron nitride layer cannot be easily wiped off.

In one aspect, there is provided a method for applying hexagonal boron nitride as lubricant onto a surface of bayonet slits of a confinement ring of an ARC source, characterized in that hexagonal boron nitride is prepared in the form of a solid piece and this solid piece is rubbed over the surface to be lubricated in such a manner that boron nitride components are abraded from the solid piece and adhere to the surface as abrasion.

In the inventive method, a solid piece that essentially includes pressed hBN powder is rubbed over the rough surface in such a way that hBN is abraded from the solid piece. This is achieved in that the solid body is moved over the surface with pressure and remains stuck onto the surface to be treated. Because of the fact that the hBN is no longer in loose powder form but rather that a plurality of powder particles are

Claims

1. Method for applying hexagonal boron nitride as lubricant onto a surface of bayonet slits of a confinement ring of an ARC source, characterized in that hexagonal boron nitride is prepared in the form of a solid piece and this solid piece is rubbed over the surface to be lubricated in such a manner that boron nitride components are abraded from the solid piece and adhere to the surface as abrasion.
2. Method according to claim 1, characterized in that the solid piece is obtained essentially through sintering of hexagonal boron nitride.