CONCLUSIONS

The main focus of the research was on the production of powders or grains of a CVD diamond of a hybrid composite material, in which, due to the optimization of the ratio of synthetic and natural diamond powders, and the optimal location of the CVD-diamond grains in the material, it would be ensured to increase their hardness and, as a consequence, increase wear resistance the material Additionally, in the source charge DCHRM in order to increase the density of the material, to facilitate the silencing of the process of forming microcracks and the formation of a fine grain structure, and as a consequence of increased strength and elastic properties, when pumping was added nano-diamond powders.

Thus, as a result of the research work, the scientific and technological bases for obtaining a hybrid polycrystalline composite, which combines the positive properties of synthetic, natural and CVD-diamonds, are developed. At the same time, the hardness of CVD-diamond grains increases by 40-50%, which makes it possible to use such material for the equipment of breeding, ruling and other tools, which operate in conditions of intense abrasive wear.

The Vickers (HV) SVD diamond hardness in the HybridAid material is greatly increased. So, for example, for SVD-diamond light - in 1,8 times, for VVD-diamond black - in 1,2-1,4 times.

As a result of the comparative tests on resistance to wearing of the rock-cutting elements (hybrid) during the sharpening of the Korostyshiv granite, the category XI of the category of drilling has determined that the intensity of wear depends on the properties and structure of the used SVD-diamond. At the same time wear resistance of the breeder sample (hybrid) is 3-14 times higher than the samples with DCHRM.