

## **Functional properties of PVD and CVD coated tool ceramics.**

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### **Abstract**

These days, the security margins are so tight, that even our safety depends on the quality of the materials that we use every day, so it is very important to be able to manufacture parts at high level of productivity and quality. Parallel to the materials development there was also the improvement of tool materials, especially ceramic tool materials. The most popular kinds of ceramic tool materials are: the oxide  $Al_2O_3$  and nitride  $Si_3N_4$  based ceramic as well as cermets. The paper presents investigation results of functional properties of the modern sintered ceramic tool materials coated with PVD and CVD methods. It was demonstrated, basing on the technological cutting tests, that putting down onto the tool ceramics the thin wear-resistant coatings increases their abrasion wear resistance, which has a direct effect on extending the tool edge life. Basing on the roughness parameter  $R_a$  of the machined cast iron surface after the cutting tests, improvement was revealed of the machined material properties, cut with coated ceramics compared to material machined with the uncoated tools.