Drag finishing as a post-treatment process of increasing the cobalt content in cemented carbide after plasma polishing

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This study investigates the use of drag finishing as a post-treatment method for sintered carbide cutting inserts with the aim of increasing the cobalt content in the surface layer. Cutting inserts initially polished by plasma discharge polishing exhibited a significantly reduced cobalt concentration at the surface, which poses a challenge for subsequent PVD coating adhesion. To address this issue, drag finishing was performed using two different media: walnut shell granulate and a mixture of walnut shell granulate with silicon carbide (SiC). The experiments were conducted using a drag finishing device developed at the Faculty of Materials Science and Technology, Slovak University of Technology in Trnava. The primary objective was to restore the surface cobalt content to a level comparable to that of the bulk material. Surface cobalt content was analyzed using energy-dispersive X-ray spectroscopy (EDX) in a scanning electron microscope (SEM). The results confirmed that drag finishing enables a partial restoration of cobalt content in the surface layer.

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