Defects in the Surface Layer of Pure Molybdenum after WEDM

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The utilisation of pure molybdenum in high-temperature applications in a vacuum requires very precise machining. Considering the fact that conventional machining methods do not achieve the required geometrical and dimensional accuracy in several cases, it is necessary to use the unconventional technology of wire electrical discharge machining (WEDM). This study aims at analysing the surface and subsurface layer of pure molybdenum after WEDM in terms of the occurrence of defects. Profile and areal parameters were evaluated by means of a contact 3D profilometer. The occurrence of individual defects both on the surface and underneath it was studied by means of the methods of electron microscopy and focused ion beam (FIB). Furthermore, the local chemical composition of the surface of the workpiece (EDX) was determined.

Keywords: WEDM, Electrical Discharge Machining, pure molybdenum, morphology of surface, topography, chemical composition, cracks

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