

Abstract

Tungsten carbide (WC-Co) is an important tool and dies material. When machining of tungsten carbide with EDM, micro-cracks are appearing on the surface of workpiece. The objective of this research is to study the influences of operating parameters of EDM of tungsten carbide and the effect to micro-cracks on workpiece. The electrode materials are graphite, copper graphite and copper tungsten. The effectiveness of the process is evaluated in term of the material removal rate (MRR), electrode wear ratio (EWR), surface crack density (Cr.S.Dn) and surface roughness (Ra).

The material removal rate increases with the cathode polarity of electrode. The graphite electrode gives the most material removal rate. The suitable duty factor is 11%. The surface crack density is decreased with low peak current that isn't higher than 20 amperes, low duty factor, open-circuit voltage of 90 volt and use graphite electrode. Finally, the discharge current is most effect to performance of EDM of tungsten carbide.