

## Characterization of WC-Co coating deposited on Al bronze by electrospark deposition

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### Abstract

In this study, WC-Co based cermet coating has been produced on an Al bronze by electrospark deposition (ESD) method. Surface morphology, chemical composition, phase composition and corrosion resistance of the coatings were investigated by scanning electron microscopy (SEM) equipped with EDS analyzer, X-Ray diffraction (XRD) and potentiodynamic polarization test. Effect of different electrical parameters were also studied. Results showed that current density had the most influence on coating thickness compared to frequency. In addition, higher spark energy did not lead to higher thickness. Surface morphology and cross section images showed the presence of splash and spattering particles on the surface as well as metallurgical bond between the substrate and coating. The corrosion resistance of coating with maximum thickness is higher than the others. Moreover, results obtained for WC-Co coating prepared in this study by ESD process is close to the ones obtained in HVOF process.

**Keywords:** Electrospark deposition, WC-Co cermet, Coating, Corrosion resistance, Spark energy.

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