

## عنوان مقاله:

Investigating the Effect of Electrical Discharge Process Input Parameters on Mechanical Properties of Aluminum Surface

## محل انتشار:

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## خلاصه مقاله:

One of the important parameters in electrical discharge machining is the presence of micro cracks on the workpiece surface (recast layer). Therefore, the aim of this study was to investigate the possibility of increasing the mechanical properties of aluminum surface by alloying elements (copper and nickel) diffusion to the recast layer and thus removing surface micro cracks. For this purpose, pulse on time and pulse current in with and without ultrasonic vibration have been considered as input parameters and the presence of surface micro cracks has been investigated using microscopic images. Also, the yield stress of the surface layer was calculated using the surface micro hardness. Based on the obtain results, surface without micro cracks has been created on the aluminum surface due to the diffusion of copper and nickel into the workpiece surface which increased aluminum surface yield strength from ۹۰MPa to ۲۸۰MPa without ultrasonic vibrations and to ۳۱۰MPa while applying ultrasonic vibrations. In other words, ultrasonic vibrations cause an average of ۲۰% increase in surface layer yield strength. In addition, according to the wear test, in the case of using ultrasonic vibration, improving the mechanical properties of the surface has caused thinner grooves .on the aluminum surface

## کلمات کلیدی:

Aluminum, Micro Cracks, Electrical discharge Process, Surface Yield Strength

## لینک ثابت مقاله در پایگاه سیویلیکا:

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