International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.9, No.07 pp 645-651, 2016

Comparison of recast-layer on die-steel machined with Al powder-mixed distilled water and kerosene dielectric fluid

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Abstract : In this paper, an attempt has been made to compare the effect of Al powder mixed distilled water and kerosene dielectric fluids with respect to white-layer thickness (WLT). The work and tool electrode materials used are W300 die-steel and electrolytic copper respectively. Pulse peak current, pulse on-time and concentration of Al powder are taken as the process parameters to study white-layer thickness. The experiments are planned using face centered central composite design procedure. Empirical models are developed for WLT using response surface methodology. Low WLT of 17.14 μm is obtained at high concentration of Al powder of 4 g/l in distilled water and at low peak current of 6 A, whereas 22.46 μm thickness obtained with 4 g/l Al powder mixed kerosene at 18 A.
Keywords : PMEDM, Distilled water, Kerosene, Al powder, W300 die-steel, white-layer.

Khalid Hussain Syed *et al* /International Journal of ChemTech Research, 2016,9(7),pp 645-651.

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