

Pengaruh proses Toyota Diffusion (TD) berulang terhadap kekerasan, struktur mikro, dan penurunan kadar karbon baja (JIS) SKD11 = Effect of repeated Toyota Diffusion Process towards hardness, microstructure, and decreasing level of carbon in (JIS) SKD 11 steel / Oktavian Budiansyah

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Abstrak

Lapisan karbida vanadium terbentuk di permukaan baja perkakas SKD11 melalui proses Toyota Diffusion dalam larutan garam selama 7 jam pada suhu 1000oC. Proses TD dilakukan 3 tahap diselingi dengan simulasi keausan dalam aplikasi menggunakan shot blast. Lapisan yang terbentuk pada setiap tahap dilakukan karakterisasi berupa kekerasan mikro, ketebalan lapisan, scanning electron microscope (SEM), dan Energy dispersive spectrometry (EDS). Kekerasan lapisan yang didapat pada TD I, II, dan III adalah 3481 HV, 3105 HV, dan 2943 HV. Sedangkan kekerasan substrat yang didapat 1110 HV, 774 HV, 766 HV. Ketebalan yang didapat pada TD I, II, dan III ialah 8.8 m, 6.1 m, dan 4.6 m. Kekerasan dan ketebalan serta persentase karbon yang dihasilkan semakin berkurang seiring dengan banyaknya pengulangan proses.Vanadium carbide coating on SKD 11 tool steel were prepared by Toyota Diffusion process in molten salt bath for 7 h at 1000oC. TD process performed 3 times with shot blast in each stage to simulated wear in applications. The obtained coatings were characterized by micro hardness, coating thickness, scanning electron microscope (SEM), and Energy dispersive spectrometry (EDS). Coating hardness values in TD I, II and III were 3481 HV, 3105 HV, and 2943 HV. While the substrate hardness values were 1110 HV, 774 HV, 766 HV. The obtained thickness in TD I, II and III were 8.8 m, 6.1 m, and 4.6 m. The hardness, thickness value and carbon level decreased along with repeated process.