

Title: Effect of heat treatment on microstructure and mechanical properties of as-forged ZYK530 Mg alloy

Abstract: In the paper, the microstructure and mechanical properties of ZYK530 Mg alloy with different aging heat treatment processes were analyzed and studied by OM, SEM, EDS and XRD. The results show that after heat treatment at different temperatures and aging times, the hardness of the alloy first decreases, then increases in a wave-like manner, and then decreases in a wave-like manner after reaching its peak value. The optimum aging process of ZYK530 alloy is T5-220°C×5h, and the maximum hardness is 88.34HRE, which tensile strength, yield strength and elongation are 335MPa, 305MPa and 13.5% respectively. Compared with the untreated forged alloy, the mechanical properties are increased by 6.3%, 4.8% and 35%, which its fracture mechanism is mainly ductile-brittle mixed fracture.