

EFFECT OF THERMO MECHANICAL PROCESSING ON MICROSTRUCTURE AND WEAR BEHAVIOR OF FREE-CARBIDE STEEL CONTAINING DIFFERENT ALUMINUM

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ABSTRACT

This paper studies the effect of addition different Al contents (0.1 and 0.5%Al) and different post cooling rates after hot forging on the tensile properties and wear resistance of free-carbide steel. Dry sliding wear tests were carried out using experimental design technique (pin on disc) at different pressures of 1, 2 and 3MPa versus different velocities range of 1 to 10m/s. The worn surface was observed. Relationship between different work hardening due to different cooling rates and wear rates were plotted using **Lorentzian equation**. Addition of Al remarkably enhances the wear resistance of steel.

KEYWORDS: Al Content, Dry Sliding Wear Resistance, Hot Forging