

Carbide layer elimination for optimization of 1.3247 tool steel properties

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ABSTRACT

High-speed 1.3247 alloy steels contain chromium, vanadium, molybdenum (or tungsten) and in some cases cobalt. These alloys are usually used in materials forming and machining operations. Constituent carbides like M₂C, M₆C and MC have the major role in prevention of the steel tools erosion. Being small and having uniform distribution allows carbide particles to highly improve the strength of 1.3247 steels. This paper illustrates 45 experiments to find out the optimum heat treatment cycle. Grain growth and carbide layer formation have shown detrimental effects. Optimum treatment has prevented grain growth and carbide layer formation when improving the erosion-resistance of the high-speed steel of the largest resistance.

Keywords: heat treatment, high speed tool steel, brine bath, austenitizing, tempering