

Effect of Shot Peening on the Fatigue Properties of 40NiCrMo7 steel

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Fatigue properties of 40NiCrMo7 low alloy steel in the high cycle region were tested by rotating bending fatigue loading ($f = 40$ Hz, $T = 20 \pm 5^\circ\text{C}$, $R = -1$) on notched specimens after application of shot peening surface treatment (cast steel balls with diameter of 0.43 mm, Almen intensity 12A, coverage 100 % and consequently the surface was re-peened with glass beads to decrease the final roughness). The compressive residual stresses created by shot peening increased the time necessary for fatigue crack initiation what in the final case increased fatigue properties. The fatigue limit σ_c was higher for almost 28 % in the case of notched shot peened specimens.

Keywords: 40NiCrMo7 low alloy steel, fatigue lifetime, shot peening, residual stresses

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