

Relaxation of compressive residual stress. Part 1: relaxation of stage I

Abstract

In this study, 2024-T351 aluminum alloy specimens were shot peened into three shot peening intensities condition to induce compressive residual stresses (RSs). Fatigue test was performed for the first and second cyclic load. Initial RSs at initial condition and after first and second cycle of fatigue loading were measured using X-ray diffraction method. Relaxation for first cycle was found to reach over 40% of initial RS and it depended on load amplitude.

Keyword: Residual stress; Residual stress relaxation; Shot peening; X-ray diffraction