

# **Study of fatigue behavior of aluminum alloys 1050A and 2219 under shot peening processes**

**Eng. Jamal Mohamed Hamed\***

**Prof. Mohammad Ali Salameh\*\***

**Prof. Hussian Jasim Al Alkawi\*\*\***

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## **Abstract**

The surface hardening by shot peening (S-P) is one of the processes used to increase the hardness of aluminum alloys surface. This step tends to increase of the fatigue strength for this alloy because of the creation of compressive residual surface stress layer, which resists the initiation and propagation of cracks. But in some cases, the opposite of this effect occurs, the fatigue strength decreases because of the initiation of surface micro cracks. The influence of this process on the fatigue strength of two aluminum alloys 1050A and 2219 was investigated. (S- N) curves are determined for two surface conditions produced by shot peening and uppeening. As well as the alloys were studied under loading programme low-high & high-low. This paper deduced that the fatigue life of aluminum alloy 1050A was reduced by a percentage of (23%) because shot peening caused high surface roughness, and consequently high local stress, but the fatigue life of aluminum alloy 2219 was increased by about (38%) because the shot peening caused the creation of compressive residual stresses.

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For the paper in Arabic see pages (65-72)

\* (Iraq) Specialty: Material science & engineering

\*\* Mechanical design engineering department Faculty of mechanical & electrical engineering University of Damascus

\*\*\* Electro- mechanical engineering department University of technology - Baghdad – Iraq