Fractography Evaluation of Fracture Surfaces of Aluminium Alloy After Fatigue Tests

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Secondary cast alloy AlZn10Si8Mg (UNIFONT-90) is generally used for engine and automotive constructions, hydraulic unit and mold making without any additional heat treatment. It has good properties such as castability, very good mechanical strength, light weight, good wear resistance and very good machining. At present, one of the main limits to a wide use of aluminium alloys for engine or automotive applications is a lack of complete understanding of their fatigue behaviour and of the relationships to microstructural features, particularly as far as casting alloys are concerned.
Fatigue properties of AlZn10Si8Mg cast alloy in the high-cycle cycle region were tested by rotating bending fatigue loading with the used of parameters - frequency f = 40 Hz, temperature T = 20 ± 5 ℃ and stress ratio R = -1. Numerous studies shown those cast aluminium alloys are very sensitive to casting defects as porosity and microshrinkages and whenever large pore is present at or near the specimen's surface, it will be the dominant cause of fatigue crack initiation.

Keywords: AlZn10Si8Mg cast alloy; fatigue properties; fracture surfaces

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