# Plastic Deformation Properties of Magnesium Alloy AZ61

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**The main object of this research was the influence of plastic deformation on magnesium alloy AZ61 with 0.5 wt. % of Ca. Tested specimens were loaded by three - point bending test and by pressure deformation. Hardeing and softening were measured also. Specimens were studied in two structural states: as - cast state and in state after heat treatment. During three - point bending test specimens were plastically deformed by dislocation slip and twinning. The compression loading of experimental specimens after heat treatment led to slip and twinning plastic deformation. Cracks were created in the surrounding area of the indentation and there was also cracking of inter-metallic phases present in the microstructure. Changes in the intensity and distribution of plastic deformation were caused by deformation strengthening and shifting of grain boundaries. Grain reorientation and strengthening of neighbouring grains occurred during the growth of plastic deformation and the hardness was increased. After reaching annealing temperature of 300 °C, decrease of the material hardness was observed.**

**Keywords:** magnesium alloy, plastic deformation, twinning, softening, hardening

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