

# Effect Of Impurities On Microstructure And Structural Properties of The As-Cast And Treated Al-Zn

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**Abstract:** The microstructure of two Al-Zn alloys (with 10 and 30 wt.%Zn content) produced by melting in the high frequency induction furnace were investigated by means of scanning electron microscopy (SEM), energy dispersive X-ray (EDX) spectroscopy, X-ray diffraction (XRD) analysis and microhardness tests. The results indicate that the presence of iron impurity causes the formation of eutectic  $(Al,Zn)_3Fe$  in both alloys. The presence of the silicon impurity results in the formation of the phase separation in the Al-10%Zn as-cast alloy. The columnar to equiaxed transition was produced only in the Al-30%Zn as-cast alloy. The Vickers microhardness is higher in the equiaxed zone than in the columnar to equiaxed transition (CET) zone. The presence of iron causes intermetallic phase formation  $(Al, Fe, Si)_{3,6}Zn$  in the Al-30%Zn as-cast alloy enabling an increase in the lattice parameter. After a homogenization treatment, the microstructure of Al-Zn treated alloys consists only of  $\alpha$  dendrites and stable eutectic phase.

**Keywords :** Al-Zn, HF melting, Dendrites, CET, Impurities, Structural properties.