

The Effect of Vanadium Addition on the Mechanical Properties and Microstructure of A319 Aluminum Alloy

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Abstract : The present work highlights some of our up-to-date findings on the effect of vanadium addition on the mechanical properties and microstructure of one of the most versatile aluminum-silicon alloys, i.e., A319. In terms of microstructure, it was found that in addition to its ability to refine some of the constituent phases, vanadium also helps in retarding the formation of some of the detrimental intermetallic compounds, such as those involving Al-Fe-Si. Preliminary studies of the effect of vanadium on the mechanical properties of A319 have shown that vanadium additions up to 0.4% cause slight increase in the yield and tensile strength. However, the vanadium addition did not show a significant effect on the hardness of the alloy.

Keywords : aluminium, vanadium, intermetallic, microstructure, mechanical properties

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