



# Minimisation of Micro-Porosity and Dross Formation in Al-Alloy Wheel Casting by Proper Melt Treatment and Charge Quality

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## ABSTRACT

One of the major problems during the production of Al-alloy wheel is the formation of micro-porosity in spoke portion of the wheel which adversely affects the properties like UTS, elongation and pressure tightness. This is utmost important to control these properties for tubeless tyres. The micro-porosity in Al-alloy wheel casting mainly depends on the initial charge chemistry, grain refinement and degassing time. The effect of charge chemistry, grain refinement and degassing time in controlling the micro-porosity of Al alloy wheel casting was studied through systematic experimental approach. The experimentation was carried out in three different stages of melt treatment. Each stages having different combination of initial charge chemistry, grain refiner and degassing time (for hydrogen gas extraction from melt). Metallic charge quality, percentage of refiner/modifier and degassing time was increased in successive stages. Microscopic examination revealed that a proper combination of charge chemistry, grain refiner and degassing time can minimise the micro-porosity in Al-alloy wheel castings. It has also been observed that the high density primary ingots as charge materials can reduce the melting time, power consumption and dross formation in comparison to that of low density primary Ingots.