## Abstract

The objective of this research is to study the effect of the hydrogen content inside of the test pieces on the tensile strength. The hydrogen content inside of the test pieces are caused by the hydrogen content in the molten aluminum and the cooling pressure inside of the mould at casting process.

In this research the experimental data are collected from an actual process of aluminum wheel casting. The specimens for tensile strength testing are prepared from the parts of aluminum wheel. The steps in the process to produce aluminum wheel consist of melting, degassing and casting with permanent mould. The hydrogen content inside of the tensile test piece is checked by the density measurement. The fatigue test specimens are prepared for the best condition of tensile strength. The result of fatigue test is plotted as the S-N curve.

The results of this research are shown that the increasing of degassing time can effect the decreasing of hydrogen content in the molten aluminum. The increasing of hydrogen content in the molten aluminum has an effect on the increasing hydrogen content inside of the test pieces which result in reducing the ultimate tensile strength and percent of elongation upon both of cooling pressure at 3 bar and 4 bar.

The degassing time in degassing process has an effect on the reducing the hydrogen content in the molten aluminum. An increasing of the hydrogen content in the molten aluminum effect the increasing of hydrogen content inside of the test pieces which result in reducing tensile strength. Finally the degassing time is a significant factor which effect on the changing of hydrogen content inside of the test pieces. The changing of cooling pressure from 3 bar to 4 bar has no effect on the hydrogen content inside of the test pieces.



**Key word:** Hydrogen content in the molten aluminum, Hydrogen content inside test pieces, Tensile strength, Degassing process, Cooling pressure.