



*Proceedings of Iran International Aluminium Conference (IIAC2018)  
April 24-25, 2018, Tehran, I.R. Iran*

## **Effects of squeeze casting parameters on surface quality and mechanical properties of a LM13 cast component**

M. Hamani, B. Niroumand\*

Department of Materials Engineering, Isfahan University of Technology, Isfahan, 84156-83111, Iran

**Abstract:** Squeeze casting is a commercially used process to produce high quality engineering parts. In this process, molten metal is solidified in a high strength die under a mechanically applied pressure resulting in superior mechanical properties. The process has been used to produce sensitive components in aerospace and automotive industries. In this research, effects of squeeze casting parameters on mechanical properties, surface quality and casting defects of a piston like component made from LM13 alloy were investigated. The results showed that mechanical properties and surface quality of the squeeze cast specimens were better than those of gravity cast samples. The optimum casting conditions in terms of mechanical properties and casting defects at an applied pressure of 83 MPa were found to be casting temperature of 680 °C and die preheating temperature of 250 °C.

**Keywords:** “squeeze casting”, “surface quality”, “casting defects”, “mechanical properties”