

论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第19卷 第7期 (总第124期) 2009年7月

 [PDF全文下载]  [全文在线阅读]

文章编号: 1004-0609(2009)07-1216-08

初始组织特征对充型过程中初生相演变的影响

谭建波¹, 李增民¹, 郭莉军¹, 樊金玲¹, 侯文杰¹, 胡映勇¹, 邢书明²

(1. 河北科技大学 材料科学与工程学院, 石家庄 050018;
2. 北京交通大学 机械与电子控制工程学院, 北京 100044)

摘要: 采用电磁搅拌法制备具有不同微观初始组织特征的半固态合金熔体, 利用半固态挤压铸造法铸造螺旋线试样, 使用定量金相技术分析试样的初始组织、成形的螺旋线试样不同长度上的初生相微观组织特征参数(固相率、晶粒尺寸和形状因子), 研究半固态合金熔体充型过程中初生相组织的演变规律。结果表明: 初生固相率在充型的沿程流动过程中变化较小; 初生相的晶粒尺寸、形状因子沿充型长度呈现波浪形变化, 波峰和波谷出现的位置与充型长度没有明确的关系; 充型后初生相晶粒尺寸的变化幅度与充型前半固态合金熔体初生相晶粒尺寸的大小有对应关系。

关键字: 初始组织; 组织演变; 半固态; 充型过程

Effect of initial structure characteristic on evolution of primary phase in mold filling

TAN Jian-bo¹, LI Zeng-min¹, GUO Li-jun¹, FAN Jin-ling¹, HOU Wen-jie¹, HU Ying-yong¹, XING Shu-ming²

(1.School of Material Science and Engineering, Hebei University of Science and Technology, Shijiazhuang 050018, China;

2. School of Mechanical and Electronic Control Engineering, Beijing Jiaotong University, Beijing 100044, China)

Abstract: Semi-solid alloy melt with different initial structure prepared by electromagnetic stirring method was poured into a special mold and a series of the spiral samples were obtained by semi-solid squeeze casting process. The characteristic parameters of the primary structure such as solid phase rate, grain size and shape factor of the spiral samples located at different filling length were investigated by the quantitative metallographic techniques to explore the evolution of primary phase of the semi-solid alloy melt during the mold filling. The results show that the variance of solid phase rate of primary phase is small along the path of mold filling. The grain size and shape factor vary in a wave-shape along the filling length. The positions of peak and trough of the wave have no clear relationship with the filling length. The range of variation of grain size after filling

has a coincidence relation with that of primary phase before filling.

Key words: initial structure; microstructure evolution; semi-solid; filling process

版权所有：《中国有色金属学报》编辑部 湘ICP备09001153号

地 址：湖南省长沙市岳麓山中南大学内 邮编： 410083

电 话： 0731-88876765, 88877197, 88830410 传真： 0731-88877197

电子邮箱： f-ysxb@mail.csu.edu.cn