

عنوان مقاله:

The effect of Cryolite Na_3AlF_6 and sodium fluoride NaF on the corrosion and wetting by molten aluminum alloys of andalusite based refractories

محل انتشار:

دومین کنفرانس بین المللی آلومینیوم (سال: 1391)

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خلاصه مقاله:

Aluminosilicate based refractories are widely used in furnace installations for melting aluminum because they are inexpensive, readily available and generally exhibit the properties desired from a refractory material. In order to improve the corrosion resistance of aluminosilicate refractories by molten aluminum, alkaline fluoride NaF and cryolite Na_3AlF_6 powders were used. Andalusite based castable with and without addition of different percent (0-10 wt%) of NaF and Na_3AlF_6 were selected and Static cup tests were performed for corrosion and wetting experiments with molten Al/alloy. Understanding effect of non-wetting chemical additives and interfacial phenomena with Al-alloys is essential for improving corrosion performance of refractories in melting/holding furnaces. Both physical and chemical properties are known to influence wetting and corrosion behavior. This paper devoted to determine the influence of alkaline fluoride and cryolite added to andalusite based castable on the reaction with aluminum alloys. These additives led to the in-situ formation of celsian phases within the refractory matrix that led to improved corrosion resistance at 1300°C . Phase analysis revealed that celsian formation suppressed the formation of mullite within refractories, thereby reducing Penetration

کلمات کلیدی:

Aluminosilicate based refractories molten aluminum corrosion non-wetting chemical additives

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