新型防粘渣剂的理论原理和材料的制备

theory principle and material preparation of New type of anti-sticking agent

渣罐的防粘渣剂在使用以后，钢渣首先与防粘渣剂接触反应，形成反应层，然后钢渣通过防粘渣剂的反应层继续扩散，与防粘渣剂继续反应。由于钢渣的粘度较大，扩散反应的能力较差，所以防粘渣剂使用以后的涂层应该有三层结构，及以次为反应层、变质层及原质层。反应层结构致密，与渣紧密结合在一起；变质层含有大量的气孔，故结构疏松，原质层几乎与使用前没什么变化，翻罐时由于原质层结构疏松，在渣块自重作用下，变质层与原质层之间分离，达到翻渣的目的。

After using the anti-sticking agent for the slag pot, steel slag and anti-sticking agent firstly contact and react, forms the reaction layer, and then steel slag layer continued to spread by the reaction of anti-sticking agent, and continue to react with anti-sticking agent .Due to the higher viscosity of steel slag, diffusion reaction ability is poor, so using the anti-sticking agent the coating should have three layers of structure, which are reaction layer, metamorphic layer and primary layer. The structure of reaction layer is compact, combined closely together with slag; metamorphic layer contains a large number of gas holes, so the structure is loose, primary layer has no change with before, when turning the pot the primary layer structure is loose, under the effect of slag block self-weight, metamorphic layer and the primary layer separates, to achieve the purpose of turning off slag.

由于炼钢过程中最好的抗渣材料是石墨碳，加上考虑抵抗转炉液态钢渣冲击的因素，设计了以石墨碳和 MgO 、Al_2O_3 为主要成分的新型防粘渣剂，充分考虑防粘渣剂与钢渣接触以后的反应特点，使氧化铁含量较高的转炉渣，与材料中的碳反应，材料中的氧化镁和三氧化二铝在高温条件下，生成镁铝尖晶石相，能够有效地抵抗钢渣的冲击。

Address:G1-1301 Binhe Xincheng, Huixian City, Henan Province
.Email:Bofu816@163.com Fax:+86 373 5988087 Web:www.bofu.io

Because the best slag resistance material in the process of steelmaking is graphite carbon, and consider the factor of impact resistance of liquid converter steel slag, design with graphite carbon and MgO style, Al2O3 as main composition of new type of anti-sticking agent, fully considering the reacting characteristics after steel slag contacted with the anti-sticking agent, make the converter with high iron oxide content react with carbon in the material, magnesium oxide and aluminum oxide in the material under the condition of high temperature, generate magnesium aluminate spinel phase, can effectively resist the impact of the steel slag.

罐体温度在 50℃以上，喷涂渣罐内壁，涂层厚度 1-2.5cm，然后渣罐底部垫入部分固态废渣，然后盛装转炉的液态钢渣，

Temperatures of the pot body is above 50 ℃ k, spray on the inner surface of the slag pot, coating thickness is 1-2.5 cm, then lay some solid waste slag at the bottom of slag pot, then to contain the liquid steel slag of converter,

采用以废弃铝-碳化硅-碳质耐火材料和钢包使用的镁碳砖耐火材料制作的新型防粘渣剂，全方位的利用了废弃耐火材料各个组分的潜在价值，变废为宝，降低了防粘渣剂生产工艺难度和生产成本，在生产中应用以后的结果表明：

Adopting waste aluminum and silicon carbide - carbon refractory, using magnesia carbon brick refractory as a new type of anti-sticking agent, comprehensively use potential value of the components of the wasted refractory, turn waste into treasure to reduce t production process difficulty and the cost of production of the anti-sticking agent, after applied in the production of the results showed that:

（1）防粘渣剂中的碳含量是影响防粘渣剂变质层的重要因素，直接决定了防粘渣剂能否顺利翻罐。

(1) The carbon content of slag anti-sticking agent is the important factor affecting metamorphic layer, directly determines if the anti-sticking agent can smoothly turn pot.

（2）新型防粘渣剂充分考虑了转炉钢渣的特点，取消了防粘渣剂中 SiC 和 Si 的成分，防止了防粘渣剂中的 SiC 和 Si 与转炉钢渣中的氧化铁发生反应，产生 SiO_2 与转炉钢渣发生化合反应，引起防粘渣剂熔点的降低，导致渣罐容易粘渣的现象发生，这一点与传统的防粘渣剂的成分有着本质的区别。

(2) New type of anti-sticking agent fully consider the characteristics of the converter steel slag, cancel SiC and Si in anti-sticking agent, to prevent SiC and Si of the anti-sticking agent from reacting with the iron oxide in the converter steel slag, generate SiO2 to react with converter steel slag, cause the reduction of melting point of slag anti-sticking agent, can easily lead to bonded slag phenomenon, this is essentially different from the composition of the traditional anti-sticking agent.

奥钢联渣罐使用现场

Address:G1-1301 Binhe Xincheng, Huixian City, Henan Province
.Email:Bofu816@163.com Fax:+86 373 5988087 Web:www.bofu.io

渣罐防粘结剂使用现场

Address:G1-1301 Binhe Xincheng, Huixian City, Henan Province
.Email:Bofu816@163.com Fax:+86 373 5988087 Web:www.bofu.io

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