

耐火材料®

双月刊

REFRACTORIES

武汉善达化工有限公司
Wuhan Sanndar Chemical Co., Ltd

耐火材料用特种功能材料与整体解决方案服务商

**创造 高分子材料与高温材料
融合 新境界**

骨料

粉料

结合剂

外加剂



我们，更加专注高温材料用特种高分子材料的领先技术和市场服务；

我们，提供一种全新方案，通过对高分子材料的分子结构设计及改性，定制您的专属外加剂，共同打造您产品的核心竞争力，创造价值提升空间；

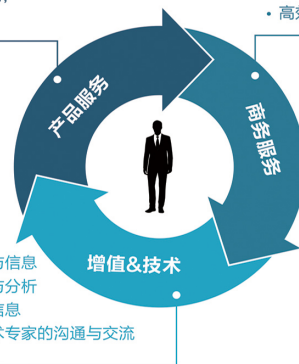
我们，组建了一支由博士领衔的技术团队，并与国际领先的化学品公司、科研院所、行业学会、协会等建立紧密合作与信息共享机制，通过持续的创新，为您提供卓越而全面的整合服务。



扫码关注“善达化工”微信公众号，
输入产品型号，可获得更多相关信息
www.sanndar.com

- 全球筛选优质化学品；
- 全球联合研发新型高分子材料；
- 确保产品技术全球领先；
- 确保产品质量稳定。

- 365天24小时快速反应
- 稳定、高效的供应链管理
- 高效、温馨的服务



- 材料知识与信息
- 材料检测与分析
- 国际市场信息
- 国内外技术专家的沟通与交流
- ...

Tel 027-85550505

地址：武汉市盘龙城巨龙大道特1号卓尔企业总部SOHO楼3A-1-405



主管、主办

中钢集团洛阳耐火材料研究院有限公司

2022 · 4 | 8月 | 出版

第56卷(总第376期)

目次

综合评述

- 277 镁钙质耐火材料抗水化研究进展·····黄 忍, 李可琢, 解厚波, 高瑞鸿, 黄 仲, 张海军, 张少伟
283 钢包透气砖的发展及其典型复合结构的损毁分析·····陈 卢, 许远超, 郭 鹏, 张 晖, 魏昌晟, 贾庆伟

研究开发

- 289 造孔剂对微孔莫来石骨料性能的影响·····金智商, 单峙霖, 赵惠忠, 余 俊, 张 寒
294 镁铝尖晶石种类对尖晶石-方镁石复相材料烧结性能的影响·····郑培毓, 张 玲, 李人骏, 陈 露
299 硅石原料特性及相变行为研究·····毛胜孝, 贾正刚, 李 兵, 员文杰
304 低温燃烧合成 $MgAl_2O_4$ 多孔陶瓷及其性能研究·····朴佳思, 杜庆洋, 白佳海
309 Si粉对刚玉-莫来石砖性能的影响·····马淑龙, 王治峰, 马 飞, 康 剑, 张积礼, 高长贺
312 水蒸气压力对两种SiC质耐火材料氧化速度的影响·····罗 天, 王文武, 牛世程, 郭文辉
315 ZrO_2 隔离层对铝酸镧基高发射率涂层物相组成和显微结构的影响·····
·····张一帆, 王 刚, 王 曲, 张 琪, 王来稳, 黄振武, 张 雷
320 催化剂对 Al_2O_3 -SiC-C浇注料显微结构和性能的影响·····
·····程翠丽, 赵子尖, 任世怡, 李 磊, 陈平安, 李享成, 朱伯铨
325 B_4C 加入量对硅溶胶结合莫来石-刚玉浇注料性能的影响·····蔡 玮, 陈金凤, 鞠茂奇, 丛培源
329 固含量对发泡法-凝胶注模制备六铝酸钙轻质材料性能和显微结构的影响·····曹易敏, 魏耀武, 孙华云, 周 辉

生产应用

- 334 硅基原料对 MgO - Al - C 材料性能和显微结构的影响·····韩晓源, 石 凯, 夏 熠, 王培训, 刘 洋, 商剑钊
339 氧化锆添加量对镁质材料性能的影响·····
·····高永军, 吴 锋, 李心慰, 苏玉玺, 冯 雨, 罗旭东, 陈卫敏, 王 琼
342 SiO_2 粒度和反应温度对熔盐法合成莫来石晶须的影响·····
·····苏玉玺, 李心慰, 吴 锋, 高永军, 罗旭东, 冯 雨, 陈卫敏
346 钢包扩容的结构模拟与应用实践中存在的问题探讨·····
·····徐国涛, 张美杰, 吴 杰, 孔勇江, 秦世民, 王志强, 肖同达, 张洪雷
351 几种碳化硅耐火材料在高温水蒸气中的抗氧化性能比较·····王佳平, 朱 冲, 吴吉光, 黄志刚, 吕春江
356 钢包耐火材料长寿化的工艺探索·····黄东平, 张彦恒, 杨晓东, 白宏宇
361 中间包修砌质量的工艺优化与应用·····张文祥, 王子然, 刘善喜, 武晓阳

标准与检测

- 364 耐火材料高温力学性能综合测定仪的研制及实验教学应用·····
·····尹玉成, 朱青友, 周双清, 夏忠锋, 李亦韦, 刘志强

综合信息

《耐火材料》被美国《艾博思科(EBSCO)数据库》收录(333);《耐火材料》和《China's Refractories》第一届青年编委会成立大会顺利召开(363)

Contents

- 277** Research progress on hydration resistance of magnesia–calcia refractories
Huang Ren, Li Kezhao, Xie Houbo, Gao Ruihong, Huang Zhong, Zhang Haijun, Zhang Shaowei
- 283** Development of purging plugs for ladles and damaging mechanisms of typical composite structures
Chen Lu, Xu Yuanchao, Guo Peng, Zhang Hui, Wei Changsheng, Jia Qingwei
- 289** Effect of pore-forming agents on properties of microporous mullite aggregates
Jin Zhishang, Shan Zhilin, Zhao Huizhong, Yu Jun, Zhang Han
- 294** Effect of magnesium aluminate spinel types on sintering properties of spinel–periclase composites
Zheng Peiyu, Zhang Ling, Li Renjun, Chen Lu
- 299** Characteristics and phase transformation behavior of quartzites
Mao Shengxiao, Jia Zhenggang, Li Bing, Yuan Wenjie
- 304** Preparation and properties of porous MgAl_2O_4 ceramics by low-temperature combustion
Piao Jiasi, Du Qingyang, Bai Jiahai
- 309** Effect of Si powder on properties of corundum–mullite bricks
Ma Shulong, Wang Zhifeng, Ma Fei, Kang Jian, Zhang Jili, Gao Changhe
- 312** Effect of water vapor pressure on oxidation rate of two types of SiC refractories
Luo Tian, Wang Wenwu, Niu Shicheng, Guo Wenhui
- 315** Effect of ZrO_2 isolation layer on phase composition and microstructure of lanthanum aluminate high emissivity coating
Zhang Yifan, Wang Gang, Wang Qu, Zhang Qi, Wang Laiwen, Huang Zhenwu, Zhang Lei
- 320** Effects of catalyst on microstructure and properties of Al_2O_3 –SiC–C castables
Cheng Cuili, Zhao Zijian, Ren Shiyi, Li Lei, Chen Ping'an, Li Xiangcheng, Zhu Boquan
- 325** Effect of B_4C addition on properties of silica sol bonded mullite–corundum castables
Cai Wei, Chen Jinfeng, Ju Maoqi, Cong Peiyuan
- 329** Influence of solid loading on properties and microstructure of lightweight calcium hexaluminate materials prepared by foaming-gel casting
Cao Yimin, Wei Yaowu, Sun Huayun, Zhou Hui
- 334** Effects of different silicon-based raw materials on properties and microstructure of MgO–Al–C materials
Han Xiaoyuan, Shi Kai, Xia Yi, Wang Peixun, Liu Yang, Shang Jianzhao
- 339** Effect of zirconia addition on properties of magnesia refractories
Gao Yongjun, Wu Feng, Li Xinwei, Su Yuxi, Feng Yu, Luo Xudong, Chen Weimin, Wang Qiong
- 342** Effect of SiO_2 particle size and reaction temperature on synthesis of mullite whiskers by molten salt method
Su Yuxi, Li Xinwei, Wu Feng, Gao Yongjun, Luo Xudong, Feng Yu, Chen Weimin
- 346** Structure simulation and discussion on practical problems of ladle capacity expansion
Xu Guotao, Zhang Meijie, Wu Jie, Kong Yongjiang, Qin Shimin, Wang Zhiqiang, Xiao Tongda, Zhang Honglei
- 351** Steam oxidation resistance comparison of several silicon carbide refractories at elevated temperatures
Wang Jiaping, Zhu Chong, Wu Jiguang, Huang Zhigang, Lyu Chunjiang
- 356** Technological exploration on longevity of ladle refractories
Huang Dongping, Zhang Yanheng, Yang Xiaodong, Bai Hongyu
- 361** Process optimization and application for tundish repair quality
Zhang Wenxiang, Wang Ziran, Liu Shanxi, Wu Xiaoyang
- 364** Development of a comprehensive tester for hot mechanical properties of refractories and its experimental teaching application
Yin Yucheng, Zhu Qingyou, Zhou Shuangqing, Xia Zhongfeng, Li Yiwei, Liu Zhiqiang

Sponsor : Sinosteel Luoyang Institute of Refractories Research Co., Ltd.(LIRR)

Editor and Publisher : The Editorial Board of NAIHUO CAILIAO

Editor-in-chief : PENG Xigao

Add : 43 Xiyuan Road, Luoyang, Henan 471039, China

Tel : +86–379–64205959 Fax : +86–379–64205970

E-mail : nhcl@nhcl.com.cn

Web Site : <http://www.nhcl.cn>

Subscription rate :

Print : USD 150 (overseas, including air mail postage)

Digital : USD 100 (overseas)

Sponsored by Sinosteel Luoyang Institute of Refractories Research Co., Ltd. (LIRR), established in 1966, **Naihuo Cailiao (Refractories)** is the only technical journal in Chinese in China's refractories industry that reports current situations of the R & D, production and application of refractories in China together with the development status and trend of refractories science and technology abroad. **Naihuo Cailiao** is published bimonthly and distributed both at home and abroad with the annual distribution circulation of about 20 thousand copies.

Naihuo Cailiao also affords space for advertisement which is beneficial to the manufacturers and users home and abroad to establish connection, to promote production and sales, and especially to help foreign companies share China's market.