

## 利用高炉瓦斯泥中的锌制备活性氧化锌的研究

Study on preparing active zinc oxide using zinc of blast furnace sludge

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中文关键词: [高炉瓦斯泥](#) [回收利用](#) [活性氧化锌](#) [火法富集](#) [焙烧](#) [湿法浸取](#)

英文关键词: [blast furnace sludge](#) [reutilization](#) [active zinc oxide](#) [pyrometallurgy enrichment](#) [roast](#) [wet leaching](#)

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作者 单位

[罗文群](#) [湘潭大学化工学院, 湘潭 411105](#)

[刘宪](#) [湖南华菱湘潭钢铁有限公司能源环保部, 湘潭 411101](#)

[杨运泉](#) [湘潭大学化工学院, 湘潭 411105](#)

[贺恒](#) [湘潭大学化工学院, 湘潭 411105](#)

[高波](#) [湘潭大学化工学院, 湘潭 411105](#)

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中文摘要:

利用高炉炼铁瓦斯泥中的锌, 采用火法富集和湿法浸取制取活性氧化锌。考察了温度、时间对火法富集产品中氧化锌含量和原料瓦斯泥中锌挥发率的影响, 确定了富集工艺的最佳条件: 在氮气氛围下, 温度从常温以10℃/min升温至1 000℃并且在1 000℃下保持1 h, 得到的富集产品中氧化锌含量82.24%; 瓦斯泥中锌挥发率97%。同时考察了温度、氨水用量、碳酸氢铵用量和液固比等因素对氧化锌浸取率的影响。确定的最佳工艺条件为: 浸取温度40℃, 氨水用量为理论量的2倍, 碳酸氢铵用量为理论量的2倍, 液固比4:1, 浸取时间2 h, 氧化锌浸取率达99.9%。湿法制得的活性前驱体碱式碳酸锌, 经煅烧得到纯度为98.4%的活性氧化锌产品, 氧化锌的总回收率达95.3%。

英文摘要:

Active zinc oxide was prepared by pyrometallurgy enrichment and followed by wet leaching using zinc-containing blast furnace sludge as raw material. The effects of temperature and time on zinc volatilization efficiency and zinc oxide content from the sludge were studied in the pyrometallurgy enrichment process. The optimum condition was that the calcination temperature increased from room temperature to 1 000 °C with a rate of 10 °C/min temperature programme and then remained for 1 h under nitrogen atmosphere. The zinc oxide content and zinc volatilization efficiency was high to 82.24% and 97%, respectively. The effects of temperature, the amount of ammonia and ammonium bicarbonate and the ratio of liquid to solid on the zinc oxide leaching efficiency in the wet leaching process were also investigated. The optimal conditions were that with 40 °C of leaching temperature, two times of theory amount of ammonia and ammonium bicarbonate, 4:1 ratio of liquid to solid and 2 h of leaching time, the zinc oxide leaching efficiency was high to 99.9%. The precursor basic zinc carbonate, obtained in the wet leaching, was calcined to produce active zinc oxide with a purity of 98.4%. The total recovery efficiency of zinc oxide was high to 95.3%.

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主办单位：中国科学院生态环境研究中心 单位地址：北京市海淀区双清路18号 邮编：100085

编辑部服务热线：010-62941074 传真：010-62941074 邮箱：cjee@rcees.ac.cn

技术支持：北京勤云科技发展有限公司