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有机成型助剂对煤质蜂窝活性炭性能的影响

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摘要 以大同煤为主要原料, 豆油、水溶性粘合剂和煤焦油为有机成型助剂, 制备了蜂窝炭化料和活性炭样品。用SEM、N₂吸附、元素分析等测试手段对样品进行了表征分析, 考察了有机成型助剂对蜂窝活性炭性能的影响。实验结果表明: (1) 甲基纤维素适宜作为煤粉挤出成型的水溶性粘合剂; (2) 控制煤焦油在原料中的比例是制备高机械强度且外形完整蜂窝炭化料的关键; (3) 添加的有机成型助剂不显著影响蜂窝炭化料和活性炭的孔隙结构, 蜂窝活性炭的孔隙结构主要是由煤的特性决定的。

关键词 活性炭 蜂窝 有机添加剂 孔隙结构

Effect of Organic Additives on Properties of Coal-based Activated Carbon Honeycombs

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Abstract A series of activated carbon honeycombs (ACH) are prepared through mixing, extruding, carbonizing and activating, using Datong coal as carbon precursor, water soluble resin as temporary binder, bean oil as lubricant, and coal tar as bonding agent. Elemental analysis, SEM, and low temperature nitrogen adsorption are used to monitor the changes caused by these additives on the samples. The results show that methylcellulose is a suitable water soluble binder for preparation of ACH. Among those additives, the mechanical strength and geometrical shape of ACH are related to the coal tar amount closely. In the meantime, the addition of organic additives has no effect on the pore size distribution of ACH, it is related to the coal type.

Key words activated carbon, honeycomb, organic additives, pore texture

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