

## 改性坡缕石粘土的全孔分布研究

### A Study of full hole distribution of modified palygorskite

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英文关键词: [palygorskite](#) [modification treatment](#) [full hole distribution](#) [adsorption-desorption isotherms](#)

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中文摘要:

为改善坡缕石粘土的表面性能和提高其实用价值,采用酸浸、酸浸+加热、酸浸+加热+甲醛浸渍3种方法处理天然坡缕石粘土,并通过扫描电镜(SEM)、傅立叶变换红外光谱(FT-IR)、X荧光光谱(XRF)、BET比表面积分析(BET-SSA)及全孔分布等分析手段来评估坡缕石粘土的处理效果。结果表明与未经处理的原土相比,经过3种方法处理,坡缕石粘土内部细长而致密有序的晶束被打断、破碎和分散,微晶表面粗糙度增大;杂质特别是碳酸盐的去除效果显著,比表面积是原土的2倍多,总孔容积几乎增加1倍,中孔容积从0.092cm<sup>3</sup>/g增加到0.15cm<sup>3</sup>/g左右,平均孔径减小2~3nm;处理后坡缕石粘土的假孔分布峰值在17nm,比原土假孔分布峰值22nm减小约5nm,而且4个样品中的孔几乎都在介孔2~50nm范围内,大孔和微孔很少。但3种处理方法对于坡缕石粘土的处理结果没有太大的差异。

英文摘要:

In order to improve the superficial performance of palygorskite and raise its application value, the authors treated the natural palygorskite (NP) with three processing methods, namely, acid dipping, acid dipping + calefaction, and acid dipping + calefaction + formaldehyde infusing. The performance of the modified palygorskite (MP) was also investigated by such means as SEM, FT-IR, XRF, BET-SSA and full hole distribution analysis. The results show that, compared with characteristics of NP, the gracile and aggregated compact crystal bundles in MP are subjected to fragmentation and decentralization, the roughness of microcrystalline surface increases, some impurities, especially the carbonates, are removed remarkably after treatment, and the specific surface area and the total pore volume (V<sub>total</sub>) in MP are more than and close to two times of the area and the volume in NP, respectively. The mesopore volume (V<sub>meso</sub>) increases from 0.092 cm<sup>3</sup>/g to 0.15 cm<sup>3</sup>/g, while the mean pore size decreases by 2~3 nm. The phoney pore size distribution peak of MP is 17nm, which is 5nm smaller than the 22 nm of NP. In addition, the pores in all samples are mostly mesopores whose sizes vary in the range of 2~50 nm, and macropores and micropores are rarely seen. However, the three processing methods show no remarkable differences in the treatment results.

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