
Sealing Properties of Bentonite Suspensions*

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Abstract: Sealing with waterborne clays is a rapid and low cost method of controlling seepage through porous media whenever the clay source is within economical shipping distance of the sealing site. But more must be learned about this method of sealing before it can be fully utilized.

Water impedance of waterborne bentonites, as measured by water loss in the filter press test, was correlated with their physical, chemical and mineralogical properties. A multiple linear regression analysis showed clay content and exchangeable sodium percentage (ESP) were most highly correlated with water impedance. Swelling, viscosity and gelation of these clays play only a secondary role in forming a water barrier when used as dilute waterborne sealants as suggested by these and other data.

There were strong positive correlations between water loss and samples high in silt-sized cristobalite, quartz and feldspar; and negative correlations between water loss and samples high in clay-sized montmorillonite, chlorite and illite.

Predicted minimum clay contents (of prospective sealers) were found to be 65– 75 per cent clay at 70 and 20 per cent exchangeable sodium, respectively.

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