
Internal Surface Area of Wyoming Bentonite from Swelling Relationships

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Abstract: The internal surface area of Na-Wyoming bentonite was determined for linearly swelling pastes, using a physically based equation which describes such swelling. Information required is simply the linear relationship between interplatelet spacing, determined by X-ray powder diffraction, vs total water content determined gravimetrically. However, before the three-unknown parameter equation can be so applied, that portion of external-pore water, which normally increases linearly commensurately as interstitial water increases, must be decreased to zero. This was accomplished by adding dilute quantities of NaCl salt to the clay-paste system to decrease the attractive forces between positive-edge and negative-face sites, and stirring vigorously to further destroy the card-house structure and align the clay platelets.

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