
Estimate of Clay-Mineral Content: Additions of Proportions of Soil Clay to Constant Standard

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Abstract: The method of known additions for estimating clay-mineral content was reversed in that increasing proportions of soil clay were added to a standard composed of equal weights of kaolinite, illite, and montmorillonite. After glycolation, peak-area ratios were calculated from 7.2 (kaolinite), 10 (illite), 14 and 17 Å (vermiculite and montmorillonite) diffraction peaks of standard, mixes, and soil clay. Ratios were plotted against % soil clay from the standard (0%) through the mixes (14 to 77%). Curves of fit were calculated and projected to 100% soil clay giving theoretical values which agree with measured values. As weight proportions are known in the standard, the projections permit estimates of clay-mineral weight proportions in the soil clay.

Key Words: Constant standard • Quantitative analysis • Soil clay • X-ray powder diffraction

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