
Titanium as Free Oxide and Substituted Forms in Kaolinites and Other Soil Minerals

D. L. Dolcater, J. K. Syers and M. L. Jackson*

Department of Soil Science, University of Wisconsin, Madison, Wisc. 53706

* Research Assistant, Assistant Professor and Professor, respectively.

Abstract: Titanium in TiO_2 minerals was differentiated from that isomorphously substituted into minerals by the use of dihydrogen hexafluorotitanate (hydrofluotitanic acid, H_2TiF_6), which selectively dissolved minerals containing substituted Ti^{4+} , leaving free crystalline TiO_2 minerals in the residue. Titanium analyses on the original samples and the residues remaining after H_2TiF_6 treatment, by both wet chemical (Tiron) and neutron activation methods, indicated that an average of 86 per cent of the titanium in seven kaolinite samples was present in the residual TiO_2 form (largely anatase), whereas only 28 per cent in two bentonites was present in the TiO_2 form. Residual Ti accounted for 100 per cent of the Ti in synthetic anatase and for 92 per cent of the Ti in coarse clay sized rutile, the latter value suggesting that about 8 per cent amorphous TiO_2 was removed from the mechanically dry ground rutile by the H_2TiF_6 reagent. The Ti present as residual TiO_2 in a variety of other samples ranged from 0 to 100 per cent.

Clays and Clay Minerals; July 1970 v. 18; no. 2; p. 71-79; DOI: [10.1346/CCMN.1970.0180202](https://doi.org/10.1346/CCMN.1970.0180202)

© 1970, The Clay Minerals Society

Clay Minerals Society (www.clays.org)
