
A Chloritized Montmorillonite from the Rio Chiflon Formation (TR) of Argentina

Gerardo E. Bossi

Instituto Miguel Lillo, Tucumán, Argentina

Abstract: X-ray, chemical, and genetic characteristics of a chloritized montmorillonite mineral species, found in The Río Chiflón Formation (La Torre, La Rioja, Argentina) are described. The mineral is associated with illite, montmorillonite, and chlorite, plus the non-clay associates analcite and hematite. The Río Chiflón Formation is of Upper Triassic age, and consists of red sandstones and siltstones representing poorly developed fluvial cyclothems.

Studies of the Li^+ , K^+ and Mg^{2+} varieties of the clay, and solvation with glycerol or ethylene glycol have shown that the mineral is a smectite which behaves peculiarly with heating. Between 200° and 600° C the mineral collapses gradually from a basal spacing of 13–10 Å. Regular expansibility with ethylene glycol and glycerol is completely preserved (in the Li^+ and K^+ clays) up to a preheating of 400° C and partially preserved up to 600° C. This behavior has been interpreted as caused by the presence of interlayer contaminants of a hydroxy-cation type. The interlayer cations may be Al, Mg, and Fe, (in this order).

The environment of the Río Chiflón Formation has been evaluated in the light of well-known occurrences of intergradient clays in soils, and the presence of analcite and hematite. It is proposed that chloritization has taken place during a soil weathering process, under alkaline conditions with great availability of sodium during alternating dry-humid seasonal climates (oxidation conditions). The stability of the interlayer developed under these circumstances was increased during long burial and diagenesis.

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