

CHARACTERIZATION OF IRON IN KAOLIN BY ELECTRON SPIN RESONANCE AND MOSSBAUER SPECTROSCOPY

1BERTOLINO, L. C., 2ROSSI, A. M., 3TOREM, M. L. 2SCORZELLI, R. B. and 4PINHEIRO, J. L.1- Pontificia Universidade Catolica and Universidade Santa Ursula – Rio de Janeiro2- Centro Brasileiro de Pesquisas Fisicas – Rio de Janeiro3- Pontificia Universidade Catolica – Rio de Janeiro4- Mineracao Monte Pascoal Ltda – Rio de Janeiro

Kaolin from Prado region, southern of Bahia state (Brazil) has been mined by Monte Pascoal Mining Company Ltd. Since 1992. It is mainly used in the Brazilian paper and petroleum industry. The mineral deposit has two distinct levels. In the base of the sequence the kaolin is white, rich in kaolinite and presents low iron content. In the upper level, kaolin has secondary origin, color ranging from light gray brown, low crystalline degree and high iron content. Kaolin belonging to these two levels has been collected and submitted to similar magnetic and chemical treatments, which are normally used in the paper industry. The sample mineralogical and structural characteristics were determined by X-ray diffraction, scanning electron microscopy and chemical analysis. The electron spin resonance (ESR) and Mossbauer spectroscopy (MS) studies revealed that iron in kaolin can be associated with iron oxides and/or hydroxides and also in different sites of the kaolinite structure. The variation of the kaolinite structural iron content along the deposit and its correlation with sample crystallinity were established.