

MINERALOGICAL CHARACTERIZATION OF MATERIAL TO THE UNDERLYING SOIL AREA ITABORAÍ-RJ, AIMING AT ENVIRONMENTAL RECOVERY

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The work seeks to define the potential mineralogical material underlying the soil of an area in the municipality of Itaboraí, State of Rio de Janeiro, Brazil to the environmental rehabilitation of a degraded area. The study was carried out at Embrapa Solos in partnership with other research institutions - the Department of Mineral Resources, DRM-RJ, UFF, UERJ and Research Center of Petrobras - CENPES. The sediments underlying soils currently arise at different levels due to anthropogenic processes such as urbanization and mining extraction activity clays, correlating Pre-Macacu Formations of Tertiary age and Macacu second DRM-RJ, 1981, in Embrapa, 1979. The mineralogical study of this profile was divided into twelve levels and indicated the presence of material with high cation exchange capacity to provide the necessary elements for the development of plant forms adapted to the new environment degraded. Part of this knowledge was obtained through macroscopic analysis and technical analysis for the sand grains, the x-ray diffraction and scanning electron microscopy for the clays and chemistry to levels more clay. The mineralogical composition of the fractions shows great predominance of sandy mineral quartz followed by micas and / or feldspar. The clay fraction consists predominantly of kaolinite followed by illite, with the exception of level 12, where it also occurs interstratified vermiculite-smectite-rich smectite. The samples studied by the methods proposed, presented themselves formed, the clay fraction predominantly of kaolinite. At levels 5 to 9 are indications of interstratified mineral type and levels 2:1 10:11 in the presence of illite process degradação. O level 12 differs completely from the sequence is presented as consisting of kaolinite with early hydration, and illite-smectite interstratified vermiculite-rich smectite. Fractions sands constitute a quartz nodules / ferruginous concretions, muscovite, sericite and trace rutile / ilmenite, graphite, tourmaline, magnetite, epidote, zircon and anatase. The most significant variations occur in the levels 7, 9 and 10/11 by increased presence of mica (muscovite and sericite), respectively 8%, 8% and 16%, with the presence of modified feldspar (3%) and the level by 12 presence of 25% slightly altered feldspar (microcline, orthoclase and plagioclase) relative to previous levels, and traces of biotite altered. Texturally, levels 3 and 4 were classified as sandy-clay, as levels 5 and 6 in sandy clay loam, level 7 in sandy loam, 9 and 10 in clay, very clayey and 11 in level 12 in sandy clay loam. The chemical study, Table 2 showed a higher concentration of Ca ++, Mg ++, K + and Na + levels 11 and 12, this fact possibly due to the presence of illite and interstratified vermiculite, smectite-rich smectites. The higher content of Al₂O₃ is related to a higher concentration of kaolinite and mica scraps and / or feldspar 10:11 levels compared to levels 5 and 12. Therefore, the study showed the levels being 11:12 the most useful providers of exchangeable cations a renewal.

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