

Resumen ° 127

Geological and technological evaluation on ball and plastic clay in Brazil

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Key words: ball and plastic clay, raw material, porcelain stone, ceramic tiles

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Ball and plastic clays is a clayey material constituted by kaolinite, illitic mica, or sericite, fine quartz and other minerals, with small amounts of organic matter, that play an important role in the worldwide ceramic industry providing strength, plasticity, light cream to white fired color and others special characteristics for sanitary-ware, floor and wall tile, tableware, electric insulator, refractories, glaze and frits. In addition, plastic clays have other nonceramic usages such as coating or filler in rubber, adhesives, sealants and fiberglass.

The major users of plastic clay are the sanitary-ware, wall and floor tile producers. Only for the tile industry the estimated consumption is over 10 million tons of plastic clays yearly, and demand is going up for the coming years, mainly for porcelain stone production.

Brazilian ceramic tile industry produces around 600 million square meters of floor and wall tiles by year, including 33 million of porcelain stone and around 130 million of other white body tiles. It requires a domestic supplying of around 1 million tons of plastic clay per year. In spite of the small amount of porcelainstone produced in Brazil, its production is going up fastly (18% in the period of 2004-2005). This fact will demand more plastic clay each year as well as feldspar and other raw material and processed minerals.

This paper deals with an evaluation of Brazilian plastic clays to supply present and future market. The study involved several deposits in the country and around 40 samples were selected for detailed investigation on mineralogy, chemical composition, ions exchange capacity, carbon content, particle size distribution and ceramic properties.

After shows these characteristics and properties of individual samples and deposits this paper discusses its relationship with geological setting and evaluates the potential for ball and plastic clay in Brazil.