

GEOSTATISTICAL FRAMEWORK FOR MODELING CLAY DEPOSITS: NOVA VENEZA CASE STUDY IN SOUTHERN BRAZIL

1STANGLER, R.L. ; 2ARMSTRONG, M.; 1KOPPE, J.C. and 1COSTA, J.F.C.L.
1Dept. of Mining Engineering, Federal University of Rio Grande do Sul, Porto Alegre, Brazil; 2Centre de Géostatistique, École des Mines de Paris, Fontainebleau, France.

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The region of Criciúma, Santa Catarina State, Southern Brazil, is one of the world's main industrial districts for ceramics production. Clay minerals are one of the key ingredients. The clay's characteristics including several physical and chemical parameters need to be known over the whole deposit in order to allow appropriate mine planning, scheduling and blending. The clays homogeneity is vital for ceramic processing. This paper proposes a geostatistical framework to model two quality variables: water absorption and linear retraction, both expressed as percentages, in addition to the clay seam thickness. The methodology described was used in a clay deposit located in the region above cited. Two sedimentary systems conditioned by tectonic structuring, corresponding to two anisotropy systems with different representativity, interact and affect the spatial continuity of the variables in different ways. Samples were available from 452 auger holes covering an area of 800m x 800m approximately. As the sample lengths varied, a 2D approach was carried out using accumulations. Run of mine was classified as high/low quality based on these quality variables estimations, requiring maximum accuracy in estimate at each block. Ordinary kriging provided estimates at 25 x 25m blocks, and stochastic simulations were performed to assess the variability on the mining blocks' quality. The results obtained proved to be more efficient than traditional evaluation methods currently used.