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Black dimensional stones: Geology, technical properties and deposit characterization of the dolerites from Uruguay

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Dimensional stones with a black color occupy a prominent place on the international market. Uruguayan dolerite dikes of andesitic and andesitic–basaltic composition are mined for commercial blocks of black dimensional stones. A total of 16 dikes of both compositions were studied and samples collected for geochemical and petrographical analysis. Color measurements were performed on different black dimensional stones in order to compare them with the Uruguayan dolerites. Samples of the two commercial varieties (Absolute Black and Moderate Black) were obtained for petrophysical analysis (e.g. density, porosity, uniaxial compressive strength, tensile strength, etc.). Detailed structural analyses were performed in several quarries. Geochemistry and petrography determines the intensity of the black color. When compared with commercial samples from China, Brazil, India and South Africa, among others, the Uruguayan dolerite Absolute Black is the darkest black dimensional stone analyzed. In addition, the petrophysical properties of the Uruguayan dolerites make them one of the highest quality black dimensional stones. Structural analyses show that five joint sets have been recognized: two sub-vertical joints, one horizontal and two diagonal. These joint sets are one of the most important factors that control the deposits, since they control the block size distribution and the amount of waste material.