



Use and misuse of serpentinites as dimension stone

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Serpentinite is a very attractive rock, very commonly used as dimension stone. However, not all serpentinites can be used in this way. The most widely used commercial serpentinite comes from India (i.e., Rajasthan Green), but other countries produce serpentinites, such as Italy (Verde Alpi, Verde Prato), United States (Vermont Verde Antique) and Spain (Verde Macael, Verde Pirineos). The geomechanical properties of a serpentinite are strongly related to its mineralogy [serpentine-group minerals and carbonates, mostly], and not all serpentinites are created equal. We have compared the mineralogy and mechanical properties of serpentinites that comply with the Standard Specification for Serpentinite as Dimension Stone (i.e., Rajasthan Green, Verde Macael) with those that do not (Verde Pirineos). Verde Pirineos consists of lizardite, and the carbonates, mostly dolomite, are restricted to veins. Rajasthan Green consists of antigorite, and most of the serpentine has been replaced by carbonates, dominantly magnesian calcite. Taking into account their composition and textures, rocks with such differences will evolve in different ways in a weathering environment. In replacing damaged serpentinite from a building, it is important that the new piece have the same characteristics, otherwise the replaced tiles will not look appropriate in aesthetic terms. This is particularly important in restoring monuments. Petrographic studies and X-ray diffraction are essential in analyzing the commercial potential of these rocks, and results are directly related to the geomechanical behaviour of the samples.