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The Crevoladossola marble (Piedmont, northern Italy): nine commercial varieties in just one quarry!

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The Ossola valley (central Alps, northern Italy) is well known to produce a wide range of dimension stones: granites, gneisses, marbles and soapstones. The calcitic Candoglia marble is well-known because it was used in the cathedral of Milan, whereas the dolomitic Crevoladossola marble is widely spread and appreciated on the market. This work focusses on the varieties of the latter, the Crevoladossola marble: it pertains to the Mesozoic metasedimentary cover that tectonically separates the Monte Leone and Antigorio nappes (lower Penninic Units), with a quite steep structural setting and multiphase folding. The location of the quarry (Lorgino di Crevoladossola) is the same of the historic Pavia quarry of the «*Fabbriceria del Duomo di Pavia*», at the beginning of the 16th century. At present time there is only one active quarry which produces nine commercial varieties: among these, *Palissandro Bluette*, *Palissandro Blu Nuvolato*, *Palissandro Classico* and *Palissandro Oniciato* are the most common ones. The quarry front is terraced and the extraction technology only uses diamond wire technology; the large extracted blocks are then selected based on their dimension, textural and chromatic features. The Crevoladossola marble (dolomite content 75 – 90% wt.) has fine grain size and variable colour and texture due to the different amount of phlogopite (10 – 25% wt.) which defines the foliation plane, characterized by abundant isoclinal folds; there are also smaller amounts of quartz, anorthite, chlorite, tremolite, and rare disseminated sulphides. The presence of tremolite initially created doubts about the possible presence of asbestiform phases, however in-depth SEM-EDS analytical investigations excluded the presence of fibers, showing only cleavage fragments or prismatic - acicular crystals. With respect to the Candoglia and Ornavasso marbles, the Crevoladossola marble has markedly anisotropic physical and mechanical properties. In the Archaeological Museum of Milano possibly there is the first evidence of the use of this type of marble, represented by a sculpture of a Roman person (T. Labieno). Since 13th and 14th centuries this material was widely utilized in the local architecture of Domodossola, Baceno and Montecrestese, whereas its use was scarce in Lombardy: the main representative buildings are *Arco della Pace* in Milano with eight monolithic marble columns (10 m height) and the *Duomo* in Pavia (since 14th century). The marble is now used for internal facing, furnishings and valuable objects: in 1995 a block of *Palissandro Classico* was worked to produce the significant sculpture «*Uovo della Pace*» for UNICEF. The overall good quality of the rock mass and a rational exploitation make this quarry an exemplary model of dimension stone extraction; at the present time, efforts are also being

made to exploit production waste, from crushed stone up to sawing sludge.