

Malenco Serpentine: proposed as a candidate for “Global Heritage Stone Resource” designation

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The Malenco Serpentine (Serpentine of Val Malenco) is the commercial name of a meta-peridotitic geological formation, Jurassic-Lower Cretaceous in age, entirely restricted to the borders of the valley of the same name (Malenco Valley), and geographically located in Sondrio Province, Lombardy Region, North Italy.

Geologically speaking, it is part of an ophiolitic suture zone situated at the contact of the Austroalpine and Penninic nappes of the Alps (Rhaetian sector); petrographically, it is the result of a polymetamorphic (both regional and contact) and polytectonic history, with the development of a paragenesis of antigorite + chrysotile + chlorite + magnetite + diopside + olivine + titanolivine ± chromite ± pyrite ± brucite, and other iron and copper sulphurs.

Malenco Serpentine extends over an area of approximately 170 km², with a thickness ranging from 1 to 2 km.

Lithological and mineralogical features allow the recognition of three distinct lithotypes: 1) a strongly foliated Serpentine - called Serpentine-schist of Val Malenco, with a regular and penetrative schistosity, which makes it possible to split the rock into very fine sheets (“pioda”); 2) a massive Serpentine, with no remarkable foliation, called with different commercial names (Green Vittoria, Green Mare, Green Torre S. Maria etc.); 3) A Chloritic schist (Val Malenco Ollare Stone), in turn subdivisible into two main types, depending on the predominance of Chlorite or Talc, and well known for their thermal behaviour and historical utilization for the production of stoves and cooking pots.

The stone is quarried and processed since Middle Ages, and used in building and urban décor since 1800. Particularly, the splittable Serpentine has totally characterized - and still characterizes - the typology of the roofs and the urban style of the Malenco Valley architecture. “Pioda” is the name given to the roofing elements; initially used only for the local building, they were processed and transported out of the valley on sleighs and carts and sold in two distinct markets: Sundrium (now Sondrio) and throughout the region, or carried up on an old Roman caravan route to the region formerly called Rezia. From early on, Serpentinoscisto gained a reputation as an outstanding roofing material and, over the centuries, it has had a significant impact on the social and cultural life of the valley, and continues to do so today.

The excavation has been moved open-cast from the initially adopted underground system, with the use of modern technologies; but processing and installation have maintained the truly original, traditional and artisanal systems. Apart from its intrinsic geological, petrographic, commercial and technical properties, several issues related to the Malenco Serpentine are considered to be of relevant importance for its candidature for the designation as a “Global Heritage Stone Resource”. Among the most important, there are: the peculiarity of some applications (tools, tradition, technical rules), the architecture and urban landscape of the area, the importance of the whole territory (Malenco Valley is known as “a world of geology”), the presence of an EcoMuseum, the local Historical Consortium.