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90

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PETROLOGICAL AND TECHNICAL CHARACTERISTICS OF THE BUILDING STONES (MALTEZOPLAKA) EXTRACTED FROM SCOPI SITIAS (E. CRETE)

by

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Abstract

The scope of this study is to search for the mineralogical conditions and the strength of the material which is used since the Minoan period for public and private buildings as building material, building and decorating stones and also as sculpture material for the lying of furnaces and ovens in bakeries.

The building stones which are studied, have been extracted from a locality near Skopi village which according to GRADSTEIN (1973) belongs to Faneromeni Formation. This Formation consists of biogenic and organo-clastic limestones and yellowish non laminated and laminated marls, rich in Foraminifera and sponge spicules and with occasional Pycnodonta. The biogenic and biogenic-clastic limestones were probably deposited in a shallow marine enviroment.

The biogenic limestone derived by calcification of an organic tissue (algae and/or sponges), which is aprocess controlled by the decay of soft organic parts (patch reef?). The matrix is inhomogeneous and consists of a network of dark micritic biofilms, lumps and/or flakes. It is characterised by fenestral-like fabrics. The micritic matrix represents a calcified organic tissue, whereas the fenestral cavities correspond either to primary organic cavities or to non-calcified tissue. Cavities have been filled by cloudy microgranular ferroan calcite cement. In places, the micritic matrix yields peloidal fabrics that tend to form clotted texture.

The above facies is embedded in a packstone with randomly dispersed bioclasts, such as sponge spicules, planktic and benthic foraminifera and echinoids.

Fenestral fabrics include molds of sponge spicules of variable size. The original opal A of siliceous sponge spicules has been slowly dissolved, very early, under alkaline conditions, within the still soft sponge tissue and thus their original internal structure is not preserved. Slow silica dissolution combined with rapid calcification of sponges, lead to preservation of spicule molds (synsedimentary calcification). Ammonification of the decaying organic matter and sulffate reduction, due to microbial activity, seems that was responsible for the alkalinity that favours carbonate precipitation.

X-Ray Diffraction: Calcite, minor Aragonite and Quartz.
Uniaxial Compressive Strength Mpa: 94.3 kg/cm^2.
Dry Unit Weight: 1.87 gr/cm^3.
Hardness (MOSH): 2
Hardness (SMITH): 17
% of insoluble residue: 4%

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