

## البحث رقم (7) فى القائمة

<b>DECAYING PATTERNS OF QUEEN KHNUTE TOMB IN SAQQARA, GIZA, EGYPT</b>	عنوان البحث باللغة الانجليزية
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### **CRAKING AND DECAYING PATTERNS OF PHARAONIC TOMBS IN SAQQARA, GIZA, EGYPT Abstract**

#### **Abstract**

Archaeological monuments of Saqqara region are affected by cracking, weathering and man-made actions that have resulted in different types of deterioration in the long run. Accordingly historical masonry tombs in Saqqara require a full characterization of the materials used for their construction, before any restoration processes. The assessment of the mechanical and physical characteristics of the building materials is based on visual observation, sampling of the building materials used and laboratory testing of the samples (bulk density, porosity, water absorption, optical microscope, polarizing microscope (PM), XRD, SEM, compressive strength, ...etc.).

The present study is concerned with the restoration and reconstruction of a masonry tomb in Saqqara (Tomb of Queen *Khenut*), which over the years suffered significant damage due to various deterioration actions. Limestone used in the construction of historical buildings in Saqqara is classified as carbonates and salts with carbonate fragments stone. The stone is composed of carbonate cuttings; each of them is broclastic limemud stone to weak stone. This structure generally presents heterogeneous granular texture; with a very rare matrix and low cementation level between the internal components, causing a fair development of intergranular porosity. The values of bulk density are ranging from 2.22 to 2.33 gm/cm<sup>3</sup>. Otherwise, the results of porosity reveal remarkable differences between the different samples. Also the stone has low compressive strength values (The uniaxial compressive strength values varied from 96 to 104 Kg/cm<sup>2</sup>), due to the defects in its internal structure and decaying products. Finally, a damage description was carried out to identify the decaying forms. It is the basis for the quantitative rating of limestone damage by means of damage forms and products. Limestone in *Queen Khenut's Tomb* exhibits the need for restoration and preservation procedures.