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Factors Controlling Durability of Some Egyptian Non-Stylolitic Marbleized Limestone to Salt Weathering

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Abstract : Nowadays, marbleized limestone becomes one of the most important sources of the mineral wealth in Egypt as they have beautiful colors (white, grey, rose, yellow and creamy, etc.) make it very suitable for decoration purposes. Non-styolitic marbleized limestone which not contains styolitic surfaces. The current study aims to study different factors controlling durability of non-styolitic marbleized limestone against salt crystallization weathering. The achievement aim of the research was required nine representative samples were collected from the studied areas. Three samples from each of the studied areas. The studied samples was characterized by various instrumental methods before salt weathering, to determine its mineralogical composition, chemical composition and pore physical properties respectively. The obtained results revealed that both of Duwi and Delga studied samples nearly have the same average ΔM% 1.63 and 1.51 respectively and consequently A.I. stage of deformation. On the other hand, average ΔM% of Wata studied samples is 0.29 i.e. lower than two other studied areas. Wata studied samples are more durable against salt crystallization test than Duwi and Delga. The difference in salt crystallization durability may be resulted from one of the following factors: Microscopic textural effect as both of micrite and skeletal percent are in directly proportional to durability of stones to salt weathering. Dolomite mineral present as a secondary are in indirectly proportional to durability of stones to salt weathering. Increase in MgO% also associated with decrease the durability of studied samples against salt crystallization test. Finally, all factors affecting positively against salt crystallization test presents in Wadi Wata studied samples rather than others two areas.

Keywords : marbleized limestone, salt weathering, Wata, salt weathering
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