

Assessment of Orangi Sandstone Unit of Nari Formation, Karachi: Industrial Applications with Special Focus on Glass Making

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Abstract: Glass manufacturing is one of the important industrial activities in Karachi but raw material is still being imported from other countries due to unexplored potential of indigenous silica sand deposits. Therefore, this is an attempt to assess the quality of Orangi sandstone of Tertiary age for its industrial applications which is exposed in and around Karachi city. Sandstone samples (n=14) were collected from areas extending between Surjani town to Hub Dam. Textural, mineralogical and chemical analyses were carried out through sieving, XRD and SEM-EDS techniques respectively. Mineral composition of Orangi sandstone varies in the order of quartz > kaolinite > feldspar > calcite > lizardite > ferric oxide > zinnwaldite. Texturally, the grain shape of sandstone is angular to sub-angular and the size is fine sand (0.075mm). The chemical analysis revealed that the major oxides (Si, Al, Fe, Ca, Mg, Na, K) are found to be 83.16%, 4.75%, 1.06%, 0.24%, 0.56%, 0.27% and 0.45% respectively. Mineralogical, Chemical and textural results of analyzed samples suggest that Orangi sandstone can be used as potential raw material for industrial applications where beneficiation may increase its grade up to 95% silica.

Keywords: Orangi sandstone, economic evaluation, industrial application, glass making.



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