

Petrographic Analysis of Khewra Sandstone
Karuli Area, Central Salt Range,
Pakistan



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Abstract

The Khewra Formation of Cambrian age, exposed in the Karuli area Central Salt Range (Upper Indus Basin) was selected for the present petrographic study. Formations exposed in the study area ranges from Precambrian to Eocene. Khewra Sandstone overlies Salt Range Formation without any apparent unconformity and underlies Kussak Formation disconformably. Measured section is 85 m thick and mainly consists of sandstone with some interrelations of shale. Thirty samples were collected for general study, out of these sixteen were selected for detailed analysis. On basis of grain size, exposed section is divided into three parts. The variation of the grain size in the studied samples shows a more or less regular pattern from the base of Formation upwards, that is, there is a gradual increase in the grain size. Lower part is mostly very fine with some fine units in its middle portion. Middle part is generally fine and upper part is medium grain. Some silt size units also occur in the lower portion. The grain contacts are long and concavo-convex. Samples have grain supported fabric. Lower and middle part is moderately to moderately well-sorted while upper part is poorly-sorted. Formation is texturally immature. Framework grains in the studied samples essentially consist of variable amounts of quartz (69-87%), feldspar (0.9-2.1%), and rock fragments (0.1-0.5%). Accessory minerals include muscovite, biotite. Brown tourmaline, zircon and monazite are in trace amounts. The percentage volume of opaque minerals is high in lower and middle parts relative to upper part in the studied section. The cement in the studied samples consists of two types, i.e. calcite and silica. Khewra Sandstone is mineralogically mature. The modal composition suggested that on the basis of relative modal proportions of three essential framework constituents (quartz, feldspar, rock fragments) and matrix contents all the samples can be classified as quartz arenites except four samples from the lower part of the Formation which fall in the class of quartz wackes. Diagenetic changes can be observed as physical and chemical compaction, cementation, decementation, replacement of quartz, and reddish color of the formation during petrographic study.

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