MECHANICAL PROPERTIES AND PETROGRAPHIC CHARACTERISTICS OF LOCKHART LIMESTONE, SHAH ALLA DITTA, PAKISTAN

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ABSTRACT

The objectives of this study was to investigate the petrographic characteristics and mechanical properties of Lockhart Limestone exposed in Shah Alla Ditta, Islamabad, Pakistan. For each test, four bulk samples were taken from the study area. Mechanical tests were carried out which includes uniaxial compressive strength test (UCS) and schmidt rebound hammer (SRH) test. Petrographic studies were also carried out on 4 samples of Lockhart Limestone. By petrographic study, calcite and bioclast were found as the major constituents of Lockhart Limestone. The rocks were classified into wackestone and mudstone according to Dunham classification. Comparative study of UCS with calcite and bioclast showed direct relation with calcite content and inverse relation with bioclast. Regression analysis was also performed to find out linear relationship between UCS and SRH. A strong coefficient of correlation of ($R^2 = 0.8133$) was found between these two mechanical properties. The regression equation can be used in order to predict UCS of Lockhart Limestone using the value of SRH, as SRH is relatively cheaper and less time-consuming test.

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ABBREVIATIONS

ASTM	American Society for Testing and Materials,
CS	Compressive strength
ISRM	International Society for Rock Mechanics
MBT	Main Boundary Thrust
MKT	Main Karakoram Thrust
MMT	Main Mantle Thrust
SRH	Schmidt Rebound Hammer
UCS	Uniaxial Compressive Strength