Table 3 Correlation between Schmidt Hammer hardness with uniaxial compressive strength (UCS) and Young's modulus *(E)*

Equation	R^2	Researcher	Lithology
UCS			
$UCS = 6.9 \times 10^{[0.0087\gamma N + 0.16]}$	0.94	Deere and Miller (1966)	varied
$UCS = 6.9 \times 10^{[1.348 \log(\gamma N) - 1.325]}$	–	Aufmuth (1973)	varied
$UCS = 0.447\exp[0.045(N + 3.5) + \gamma]$	–	Kidybinski (1980)	coal, shale, mudstone
$UCS = 2N$	0.72	Singh *et al.* (1983)	sandstone, siltstone
$UCS = 0.4NLM - 3.6$	0.94	Sheorey *et al.* (1984)	coal
$UCS = 0.994N - 0.383$	0.70	Haramy and De Marco (1985)	coal
$UCS = 0.88N - 12.11$	0.87	Ghose and Chakraborti (1986)	coal
$UCS = 702N - 1104$	0.77	O'Rourke (1989)	sandstone
$UCS = 4.3 \times 10^{-2}(N\gamma_d) + 1.2$	–	Cargill and Shakoor (1990)	carbonates, sandstones
$UCS = 1.8 \times 10^{-2}(N\gamma_d) + 2.9$	–	Cargill and Shakoor (1990)	carbonates
$UCS = 2.208e^{0.067N}$	0.96	Katz *et al.* (2000)	limestone, sandstone
$UCS = \exp(0.818 + 0.059N)$	0.98	Yilmaz and Sendir (2002)	gypsum
$UCS = 2.75N - 36.83$	–	Dinçer *et al.* (2004)	andesites, basalts, tuffs
$UCS = 2.22N - 47.67$	–	Aggistalis *et al.* (1996)	gabbros, basalts
E			
$E = 6.95\gamma^2 N - 1.14 \times 10^6$	0.88	Deere and Miller (1966)	varied
$E = 6.9 \times 10^{[1.06 \log(\gamma N) + 1.86]}$	–	Aufmuth (1973)	varied
$E = 0.00013N^{3.09074}$	0.99	Katz *et al.* (2000)	syenite, granite
$E = \exp(1.146 + 0.054N)$	0.91	Yilmaz and Sendir (2002)	gypsum

UCS = uniaxial compressive strength (MPa), *E*: Young's modulus (MPa), *N*: Schmidt Hammer rebound number, γ: rock density (g/cm^3).
Source: From Yaşar and Erdoğan (2004): Table 1, with additions.