Slake durability of rocks is an important property of rock-mass and rock-materials in geotechnical practice. The slake durability of rocks is closely related to their mechanical properties. In this paper, mechanical properties and slake durability tests for weak and clay-bearing rocks from Beypazari Trona Bed in Ankara, were performed in order to assess the slake durability and mechanical properties (especially rock strength) of these rocks as well as to understand the relationship between mechanical properties and slake durability. In performing this relationship, statistical based correlation has been applied.