Aggregate is the most fundamental and widely used component of construction. It is used as an unbound material which constitutes about 100% of the volume of base courses, 95 to 93% of the volume of asphalt and about 85 to 75% of the volume of Portland cement concrete. Aggregate is exposed to a number of physical and chemically degrading forces during processing, transporting, and construction. As the main load carrying component of unbound and bituminous and Portland cement concretes, the aggregate must be clean, hard, sound, durable, resistant to abrasion, uniform in quality and free of any detrimental quantities of soft, friable, thin, elongated or laminated pieces, disintegrated material, alkali or other deleterious substance. For assessing the abrasion resistance of aggregates, the most common method is the Los Angeles abrasion and impact test (LAAI) which determines the relative competence or resistance to abrasion of the aggregates.

In this study, four limestones, four travertines, three crystalline marbles and one andesite were tested to evaluate the correlations between the LAAI values and the physical properties covering bulk density, Schmidt hardness, shore hardness, P-wave velocity and mechanical properties such as uniaxial compressive strength, point load index, and indirect tensile strength of rocks. Since these properties are of great importance as a source of aggregates, tests on the rock can give an indication of the strength of the aggregates.

The above rock properties were determined through standard testing methods in order to investigate the correlation between LAAI and each rock property by using regression analysis. A simple equation predicting the LAAI value based on each rock property was suggested. From the statistical tests, rock properties were found to be significant in estimating the LAAI values of rocks.