

The effects of aggregate fracture percentage on the concrete strength

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Abstract:

According to past research and empirically, concrete production will be more profitable using natural stone materials. On the other hand, the strength of this concrete is less than the concrete resistance of broken stone materials. So in this project, we are looking to know how much and in what conditions we can use broken stone materials to make concrete. And whether for any concrete section, the use of broken stone materials can have the best effect or, in certain circumstances, we can use natural stone materials. This article studies the effects of fracture of aggregates separately and simultaneously with the change in the type of cement and the ratio of water-to-cement (W/C) on compressive strength, indirect tensile strength and bending strength of concrete.

Keywords: fracture percentage, aggregate, cement type, concrete strength, water-to-cement ratio.

1. Introduction

Concrete today is known as one of the most widely used building materials in the world. Part of the factors that have made global acceptance of the use of concrete as a building material. Include: Being economical, easy access to constituents, a high degree of uniformity and high reliability of the mixture, good resistance to fire and atmospheric agents, good compressive strength, and so forth [1]. Due to the growing need of the human community with the use of quality concrete, the engineering community is always looking for the concrete production that is both in terms of strength and cost of making the best conditions. On the other hand, because rock materials contain the largest volume of concrete, it can be said that the main role of resistance in concrete is rocky material [2]. Therefore, the change in the type and amount of stone materials consumed in concrete gives different strengths both in terms of strength and cost. In many years, due to the lack of facilities for producing any kind of rock materials, concrete production was limited to a few specific types. Today, with