

THE EFFECT OF USING RECYCLED AGGREGATES ON CONCRETE DURABILITY INDICATORS

Dr. Ali KHEIRBEK* Dr. Bassam HASSAN Basel ASLAN*****

*Professor, Department Of Management Engineering, Tishreen University, Lattakia, Syria. E-mail :

alikheirbek@tishreen.edu.sy

**Professor, Department Of Construction Engineering and Management – Tishreen University – Lattakia-Syria.

*** PhD student- Department Of Construction Engineering and Management – Tishreen University – Lattakia-Syria. E-mail : basel.aslan@tishreen.edu.sy

ABSTRACT

The issue of recycling is of great importance globally, as a result of the increase in waste of all kinds that resulted from natural or human disasters, especially construction rubble, which requires large areas of landfill to accommodate it, in addition to the large material burdens resulting from relocation and disposal operations. This industrial development that our world has witnessed has forced... Technicians must search for clear scientific methodologies to benefit from recycling demolition waste so that it is suitable for use in engineering works, which makes it extremely important and an area that helps maintain a clean environment. Preliminary results show the possibility of using recycled aggregates in concrete instead of natural aggregates, but the researchers' greatest concern was the possibility of these recycled aggregates performing for a long time in concrete. Most studies indicate a decrease in resistance values when replacement rates increase, but the study of the durability of these stones in concrete was relatively weak because it required a long time and advanced techniques to probe the structure of concrete after it was exposed to destructive conditions. Hence, it was necessary to study the change in the properties of this concrete with time and to study its durability under the influence of many factors, such as the effect of destructive materials (acids and salts), mechanical resistance, capillary absorption of water, and gas permeability, and to measure the extent of the effect of replacing natural gravel with recycled gravel on its durability properties. The research results show good values for the durability indicators of concrete manufactured using recycled aggregates compared to concrete manufactured from natural aggregates only, as the durability indicators improve up to a 50% replacement rate.

Keywords: recycled aggregate, durability of concrete, concrete proprieties, Acid attack, Salt immersion.