## البحث رقم (4)

مكان النشر (بلغة مكان النشر):

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## The Effect of Different Types of Recycled Coarse Aggregates on The Properties of Concrete

The main purpose of this study is to investigate the effect of different types of recycled coarse aggregates on the properties of fresh and hardened concrete. The neutral aggregates and the five types of recycled coarse aggregates were used to produce twenty-one design mixes. The mixes are divided to three groups. Group (1) is obtained by replacing gravel coarse aggregate by recycled coarse aggregates (crushed concrete, crushed marble, crushed mosaic, crushed ceramic, and crushed bricks) at cement content =  $300 \text{ kg/m}^3$ , W/C= 0.52 Group (2) is obtained by replacing natural coarse aggregate with the same recycled coarse aggregate at cement content =  $350 \text{ kg/m}^3$ , W/C= 0.50. Group (3) is obtained by replacing natural coarse aggregate with the same recycled coarse aggregate with the same recycled coarse aggregates at cement a gregate coarse aggregates at cement content =  $400 \text{ kg/m}^3$ , W/C= 0.48. The experimental part of this study was carried out to cover the various properties of fresh and hardened recycled aggregates concrete. Twenty-one design mixes were needed for the parametric study. The effects of replacing gravel coarse aggregate on the fresh and hardened properties of concrete such as slump, density, compressive strength, splitting tensile strength, and flexural strength were investigated. Finally, the results showed that crushed recycled marble and crushed concrete are the best recycled aggregates to use in reinforced concrete. Crushed mosaic, crushed ceramic, and crushed bricks can be used in plain concrete but cement content must be increased.