

1. SECONDARY TREATED WASTEWATER AS A CONCRETE COMPONENT AND ITS IMPACT ON THE BASIC STRENGTH PROPERTIES OF THE MATERIAL

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Abstract :In Jordan, the unprecedented proliferation of building projects is anticipated to increase the potable water demand in the construction manufacturing. In the present work, secondary treated wastewater (STW) and potable water (PW) were used in the production of concrete mixes, which were subjected to testing after 3 to 28 days of curing to determine how the mechanical properties of concrete was affected by the addition of secondary treated wastewater in various proportions (25-100%). Results indicated that the use of 25% and 75% of secondary treated wastewater in concrete production increased the compressive strength to 39 MPa after 28 days of curing. A more noticeable increment was recorded in tensile strength, which was double that achieved with the standard design. Overall, the compressive strength increased by 21.95% when secondary treated wastewater was used, while the expenditure related to water usage was halved. Furthermore, there was consistency between the results obtained from scaling up to actual ready-mix concrete production and the results of the empirical work.

Keywords: Secondary treated wastewater; Tensile strength; Potable water, Mechanical properties of concrete