

## THE EFFECT OF CURING CONDITION ON COMPRESSIVE STRENGTH IN HIGH STRENGTH CONCRETE

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**ABSTRACT** - The paper shows the effect of curing condition on compressive strength in high strength concrete in three cases (Group A (moist curing in water for 7 days followed by air curing) , Group B (curing until the age test in water) and Group C (curing at high temperature  $60^{\circ}\text{C} \pm 2^{\circ}\text{C}$  for six days ) and two types of specimen of cubes (150 x 150 and 100 x 100) used in the test age (7, 28 and 90 day) respectively in four mix proportion (Mix No. 1 (40 Mpa) , Mix No. 2 (fcu 60 Mpa) , Mix No. 3 (fcu 70 Mpa) and Mix No. 4 (fcu 80 Mpa) ). Results demonstrate that, in general, concrete specimens moist cured until testing ages (Group B) give compressive strength greater than specimens moist cured for 7 days in water then followed by air – drying (Group A). The percentage of increase in strength is (5 and 12%) for mix No. 3 and 6% for mix No. 4, as compared with 3% for mix No. 1 and (2 and 4%) for mix No. 2. When the curing temperature (group C) increases, the compressive strength increases at different ratios, the percentage of increase in compressive strength at 7, 28 and 90 days for mix No. 1, mixes No. 2 and 3 are (20, 15 and 14%), (7, 11 and 5%) and (13, 12 and 5%) respectively, while mix No. 4 shows an increase of 4 and 10% in compressive strength at 7 and 28 days where there is a reduction in the strength at 90 days by about 2%. Generally, as the size of specimen decreases, the effect of temperature curing (group C) on the compressive strength increases.

**Keywords:** curing, compressive strength, concrete, high strength.

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### 1. INTRODUCTION

Curing is the name given to procedures used for promoting the cement hydration, and