"For Ehlimana, Haya and Ammar"
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Concrete is a major construction material known for its strength and durability. For long it has been considered an aesthetically unfriendly and dull material that should be hidden beneath layers of plaster and paint. Pigmented concrete is a relatively new type of concrete that offers higher chromatic qualities for architectural projects than paints. With the recent trend of urban color aiming at rendering cities with attractive color schemes using rich texture offered by conventional construction materials, pigmented concrete has become a preferable choice for building exteriors. Today, renowned architects use pigmented concrete that fulfils aesthetic and technical requirements in addition to its advantages in terms of maintenance and durability.

This study aims at achieving a better understanding of pigmented concrete and exploring its potential properties and applications. The main objective is to assess the impact of parameters such as cement color and pigment dosage on mechanical properties and color stability. Concrete specimens were made using grey and white cements and three different dosages of red, yellow and green pigments. The testing scheme includes fresh, hardened concrete and durability properties as well as color performance assessment. These tests were developed specifically for the purpose of this research work.

On the whole, pigmented concrete had lower mechanical properties than conventional concrete mixtures, yet, the reduction in strength still allows many of these mixtures to be used in structural concrete. The intermediate dosages of used pigments seem to be more adequate for both mechanical properties and color stability. Pigmented mixtures with white cement had somewhat less mechanical properties possibly due to the cement manufacturing scheme while pigmentation effect was more vivid than mixtures with grey cement. Compared with control unpigmented mixture, the average drop in compressive strength ranged between 10 percent for pigmented grey concrete mixtures and 20 percent for pigmented white concrete mixtures. The technique used for color assessment and color stability with time has repeatable results and is recommended for future use in similar studies. Applicators are encouraged to use pigmented concrete for applications involving long term pigmented effect with minimal concrete finishes.

**Keywords:** (Concrete, Architectural, Pigments, Color Measurement, Digital Imaging)
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