عنوان مقاله:

Investigating the influence of sample age and cement blaine on compressive strength mortar and concrete: A predictive modeling approach using Gene Expression Programming

محل انتشار:

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خلاصه مقاله:

This paper investigates the intricate relationship between sample age, cement blaine, and the compressive strength of mortar and concrete. Specifically, it focuses on understanding how these factors influence the mechanical properties of these materials at two critical time points: ۷ and ۲۸ days. Through a comprehensive analysis, this study sheds light on the evolving characteristics of mortar and concrete overtime. To achieve this, we introduce a novel predictive modeling approach based on Gene Expression Programming (GEP). This innovative methodology allows us to anticipate variations in compressive strength accurately. By incorporating the effects of both sample age and cement blaine, our GEP-based model provides valuable insights into the mechanical behavior of mortar and concrete. The findings of our research reveal essential correlations between sample age, cement blaine, and compressive strength. These insights contribute significantly to a deeper understanding of the factors influencing the performance of concrete materials. Moreover, our proposed GEP-based model emerges as a robust tool for forecasting compressive strength, offering engineers and designers enhanced capabilities to optimize concrete mixtures and design structures with superior performance and durability. Overall, this study not only advances our understanding of the complex interplay between sample age, cement blaine, and compressive strength but also offers practical solutions for improving the design and performance of concrete structures in various applications.

کلمات کلیدی:

Compressive strength; sample age; cement Blaine; Gene Expression Programming(GEP).

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