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Enhancing Mechanical Properties of Limestone Aggregates through Pasta Cement Coating

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Abstract

Limestone is abundant in the archipelago and coastal regions of Indonesia, but its utilization as an aggregate is limited due to its low mechanical properties, restricting it to lightweight and simple construction applications. This study investigates the impact of coating on the mechanical properties of limestone aggregates after being covered with pasta cement. The limestone samples are crushed and filtered using various sieve sizes. The coating process, utilizing a water/cement ratio of 0.5, involves a 60-minute soaking period followed by 24 hours of drying. Abrasion testing (SNI 03-2417-1991) and Impact testing (BS 812: part 3: 1975) are conducted to evaluate the abrasion value and Aggregate Impact Value (AIV) after immersion. The results indicate a notable decrease in the abrasion value from 41.66% to 38.47% and the AIV value from 23.06% to 22.65%. These findings demonstrate the potential of pasta cement coating to enhance the strength of limestone aggregates, making them more suitable for diverse construction applications, particularly in coastal areas of Indonesia.