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Abstract	:	<p>Using alternative resources from industrial by-products to produce aggregates while keeping production costs as low as possible would be environmentally beneficial and profitable. This study aims to examine the effect of the pore on mortar properties with eggshell powder (ESP) as its fine aggregate alternative based on two fundamental properties: microstructural and mechanical strength. The study replaced the sands (by volume) with ESP in the usual mortar mix with 10%, 20%, 30%, 40% and 50% chicken eggshell powder. The mortars underwent a wet curing period of 56 days with five observation days. The standard mortar properties, such as pH, carbonation depth, compressive strength, and sorptivity, were investigated. The findings show that the replacement rate significantly impacts the water-cement ratio, carbonation rate, sorptivity and compression strength. The additional calcareous of ESP is believed to have improved the mechanical component of the connection. There are no significant differences in pH for the control (R 0) and modified mortars. The greatest replacement percentage of 20% is advantageous for carbonation rate acceleration, sorptivity and early compressive strength. However, if the specifier focuses on pH and sorptivity improvements, no formulation alteration is required.</p>