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[\[PDF \(1272K\)\]](#) [\[References\]](#)**Studies on mechanical strength, thermal expansion of layering porcelains to alumina and zirconia ceramic core materials**[Yoshitaka SHIJO](#)¹⁾, [Akikazu SHINYA](#)¹⁾²⁾, [Harunori GOMI](#)¹⁾, [Lippo V.J. LASSILA](#)²⁾, [Pekka K. VALLITTU](#)²⁾ and [Akiyoshi SHINYA](#)¹⁾

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Abstract:

The aim of this study was to evaluate and clarify the various mechanical properties and behavior of layering porcelains (Tokuyama Dental Ceramic, IPS Empress 2, Cerabien, Vitadura, Creation) used for veneering high-strength ceramic core materials. The layering porcelains studied exhibited the following range of mechanical properties: compressive strength at 586–1091 MPa, bending strength at 30–97 MPa, diametral tensile strength at 16–28 MPa, Vickers hardness at 481–647 Hv, and fracture toughness at 1.36–2.05 MPa·m^{1/2}. Results of this study indicated that the mechanical shortcomings of conventional porcelain, such as brittleness and hardness, have been overcome by the enhanced mechanical properties of layering porcelain, resulting in improved fracture toughness.

Key words:[Mechanical strength](#), [Fracture toughness](#), [Thermal expansion](#)[\[PDF \(1272K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)

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