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[\[PDF \(73K\)\]](#) [\[References\]](#)**Effect of Thermocycling on Interfacial Gap-formation in Class V Cavities and Mechanical Properties of Spherical Silica Filler Addition to Resin-modified Glass Ionomer Restorations**[Kenji HATANAKA](#)<sup>1)</sup>, [Masao IRIE](#)<sup>1)</sup>, [Rosalina TJANDRAWINATA](#)<sup>2)</sup> and [Kazuomi SUZUKI](#)<sup>1)3)</sup>

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**Abstract:**

The effects of thermocycling at 20,000 cycles and addition of silanized spherical silica filler (SF) on resin-modified glass ionomer cement (RMGIC) restorations were investigated. A RMGIC added with an untreated spherical silica filler (UF) was used as a comparison. Marginal gaps in Class V tooth cavities, compressive strength, diametral tensile strength, flexural strength, and shear bond strengths to enamel and dentin were examined. All thermocycled samples showed decreased frequency of marginal gap formation as compared to the 24-hour samples, with reduction of 73% to 95%. At the immediate condition, after 24 hours, and after thermocycling, the addition of 10 wt% SF yielded the most favorable results in terms of marginal gap formation in Class V cavities, compressive strength, flexural strength, and shear bond strength to enamel. Diametral tensile strength and flexural strength were also increased significantly by the addition of 5 wt% SF. Further, shear bond strength tests showed that the addition of SF had no effect on bonding capability to enamel and dentin.

**Key words:**[Resin-modified glass ionomer cement](#), [Silanized spherical silica fillers](#), [Thermocycled](#)

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