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**Dental Materials Journal**

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[\[Image PDF \(377K\)\]](#) [\[References\]](#)**Effect of Spherical Silica Filler Addition on Immediate Interfacial Gap-formation in Class V Cavity and Mechanical Properties of Resin-modified Glass-ionomer Cement**[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 aim of this study was to investigate how the addition of silanized spherical silica filler (SF) would influence the formation of summed, immediate interfacial gaps in Class V tooth cavities. Resin-modified glass-ionomer cement (RMGIC) is usually used for Class V restorations. As such, the following aspects of RMGIC were examined in correlation with summed interfacial gaps in the tooth cavity: setting shrinkage of cement in the Teflon mold, as well as mechanical properties in terms of compressive strength, diametral tensile strength, and flexural strength.

Spherical silica filler was added to the RMGIC powder (Fuji II LC EM). For comparison purpose, untreated spherical silica filler (UF) was added too. When compared with the control (*i.e.*, original RMGIC mixed with manufacturer-recommended powder/ liquid ratio), the addition of SF significantly decreased the formation of summed interfacial gaps in Class V cavities in the immediate condition. In particular, addition of 10 wt% SF increased the compressive strength by 56%, while diametral tensile strength was increased by 28% and flexural strength by 26%.

**Key words:**

[Resin-modified glass-ionomer cement](#), [Silanized spherical silica fillers](#), [Immediate condition](#)



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