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[\[PDF \(221K\)\]](#) [\[References\]](#)**Effect of Filler Properties in Composite Resins on Light Transmittance Characteristics and Color**[Hiroyuki ARIKAWA](#)¹⁾, [Takahito KANIE](#)¹⁾, [Koichi FUJII](#)¹⁾, [Hideo TAKAHASHI](#)²⁾ and [Seiji BAN](#)¹⁾

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Abstract:

The purpose of this investigation was to examine the effect of filler particle size and shape as well as filler content on light transmittance characteristics and color of experimental composite resins. A mixture of 30 mol% Bis-GMA and 70 mol% TEGDMA was prepared as a base monomer and to which a photoinitiator (camphorquinone) and a co-initiator (N,N-dimethylaminoethyl methacrylate) were added. Four different irregular- and spherical-shaped filler types with an average particle size of 1.9-11.1 μm were added to the mixture in three different filler contents of 20, 30, and 40 vol%. Light transmittance characteristics including light diffusion characteristics of the materials were evaluated. Color values and color differences among filler contents of the materials were also determined. Materials containing smaller and irregular-shaped fillers showed higher light transmittance and diffusion angle distribution with a sharper peak, as compared with those containing larger and spherical-shape fillers. It was also found that there was a significant correlation between the specific surface area of fillers and the color difference of the materials containing the fillers. Our results indicated that the shape of filler particles, as well as particle size and filler content, significantly affected the light transmittance characteristics—including light diffusion

characteristics—and color of composite resins.

Key words:

[Filler](#), [Light transmittance](#), [Color](#)

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