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[\[PDF \(1994K\)\]](#) [\[References\]](#)**Tarnish resistance evaluation of experimental Pd-free Ag-Au-Pt-Cu dental alloys**[Yasuko TAKUMA](#)<sup>1)</sup>, [Takanobu SHIRAISHI](#)<sup>1)</sup>, [Takeshi FUJITA](#)<sup>1)</sup> and [Kunihiro HISATSUNE](#)<sup>1)</sup>

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**Abstract:**

This study evaluated the tarnish resistance of eight experimental Pd-free Ag-Au-Pt-Cu dental alloys in a 0.1% Na<sub>2</sub>S aqueous solution at 37°C. Color measurements of the plate samples were made using a computerized spectrophotometer before and after immersion in the test solution for up to 72 hours. Tarnish discoloration was evaluated using the color difference vector,  $\Delta E^*$ , in the CIELAB color space. Microstructural observation of each sample through an optical microscope revealed the matrix phase as the major constituent and second-phase small grains in the matrix phase. Selective tarnish discoloration occurred in the matrix, and fractional area of the matrix to the whole surface area was influenced by the sum of Au and Ag concentrations. The  $\Delta E^*$  value significantly decreased with increasing Au/(Au+Ag) atomic ratio. In conclusion, the Au/(Au+Ag) ratio in an alloy and the fractional area of the matrix were found to be primary and auxiliary factors affecting the tarnish resistance of the experimental alloys.

**Key words:**[Dental alloys](#), [Tarnish resistance](#), [Discoloration](#)[\[PDF \(1994K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)

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