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[\[PDF \(649K\)\]](#) [\[References\]](#)**Properties of a gypsum-bonded magnesia investment using a K_2SO_4 solution for titanium casting**[Fazal REZA](#)¹⁾, [Yukimichi TAMAKI](#)²⁾, [Hidekazu TAKAHASHI](#)¹⁾, [Naohiko IWASAKI](#)¹⁾ and [Takashi MIYAZAKI](#)²⁾

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Abstract:

The purpose of the study was to investigate the effects of a K_2SO_4 solution on the improvement of the properties of an experimental magnesia-based gypsum-bonded investment.

The characteristics of the experimental investment with different ratios of a K_2SO_4 solution were as follows: setting time ranged from 34 to 152 minutes, green and fired compressive strengths were approximately 2.15 to 5.81 MPa and 1.63 to 2.45 MPa, respectively; thermal expansion was 0.38 to 0.47% at 700°C, which did not show any significant differences due to the concentration of the K_2SO_4 solution. Titanium casting could be obtained using the experimental investment mixed with a 1% K_2SO_4 solution, and the reaction layer thickness of the casting was less than 200 μm .

The results suggest that the experimental investment mixed with 1% K_2SO_4 showed acceptable physical properties and casting characteristics for titanium casting.

Key words:[Titanium](#), [Gypsum-bonded investment](#), [\$K_2SO_4\$](#)

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