

## 预热温度对铝合金搭接激光焊 焊缝成形及组织的影响

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**摘要** 采用Nd: YAG激光器和1.4 mm厚的5A03H24铝合金板材, 在不同预热温度下用相同的激光焊参数进行了搭接激光焊试验。结果表明: 焊缝的熔深、熔宽随温度的升高而增大, 并在 $T \geq 250$  °C时增大显著; 焊缝成形和焊接过程稳定性在 $T \leq 250$  °C时随温度的升高而变好; 焊缝组织随温度的升高而粗化, 但 $T \leq 200$  °C时粗化不明显; 焊缝、热影响区和母材的显微硬度随温度的升高而下降, 但 $T \leq 100$  °C时焊缝的显微硬度下降不明显,  $T \leq 200$  °C时热影响区的显微硬度下降不明显,  $T \leq 300$  °C时母材的显微硬度下降不明显。

**关键词** [材料合成与加工工艺](#), [激光焊接](#), [预热](#), [搭接焊](#), [铝合金](#), [焊缝成形](#), [显微组织](#)

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## Effect of preheating temperature on weld shaping and microstructure for laser lap welding of aluminum alloy

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**Abstract** Laser lap welding experiments of aluminum alloy 5A03H24 of 1.4 mm thickness were carried out using Nd: YAG laser at different preheating temperature with the same welding parameters. The results show that the width and the penetration of the welds increase with increasing the preheating temperature, this phenomenon become more evident when the temperature is higher than 250 °C. The processing stability and weld shaping are improved as the temperature is increased below the 250 °C, the microstructures of the welds become coarse but not evident when as the temperature is less than 200 °C, as the preheating temperature is increased, the microhardness in the different regions decreased to different extents: quite little in the weld, HAZ and base material as the temperature is lower than 100 °C, 200 °C and 300 °C, respectively.

**Key words** [materials synthesis and processing technology](#), [laser welding](#), [preheating](#), [lap welding](#), [aluminum alloy](#), [weld shaping](#), [microstructure](#)

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