

## Microstructure Analysis of Welded Joints after Laser Welding

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Titanium alloys are widely used in aerospace and automotive industries. They are used to implement some parts of machines, also in the chemical industry, power industry, arms industry, shipbuilding, in implantology and biomedical engineering. Extent of use of this material is mainly due to high corrosion resistance, especially in aggressive environments. These are materials with a low ratio of the weight in relation to the mechanical properties. That is, while maintaining the desired mechanical properties of structures made of titanium is lighter than the standard stainless steel. Unfortunately, the properties of titanium, in particular at temperatures higher than the affinity of the nitrogen and oxygen in the air, has an effect on some types of processing. In particular, the heat treatment as cutting or welding, due to the fact that the reaction of titanium and oxygen is highly exothermic. Therefore, the parts of the titanium produced in an inert atmosphere.

**Keywords:** Laser welding, CO<sub>2</sub> laser, titan grade 2, microstructure

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