Microkerf

Laser Cutting, Drilling and Welding

Laser Welding Applications Guideline

Material	Comments
Aluminum 1100	Welds well; no cracking problem or transformation
Aluminum 2219	No cracks; no filler metal required
Aluminum 2024/5052/6061	Requires filler metal of 4047 Al to make hermetic, crack-free welds
Cu-Zn Brasses	Out-gassing of Zn prevents good welds
Beryllium Copper	Alloys containing higher percentages of alloying agents weld better due to lower reflectivity
Copper	High reflectivity may crease uneven welds; for material less than 0.01" thick, coating may enhance weldability
Hastelloy-X	Requires high pulse rates to prevent hot-short cracking
Molybdenum	Usually welds brittle; welds may be acceptable where high strength is not required
Inconel 625	Some tendency for porosity in deep welds
Monel	Good ductile welds; good penetration
Nickel	Must be cleaned; good ductile welds and penetration
Steel, Carbon	Good welds with carbon content under 0.25%; for greater carbon content, may be brittle and crack
Steel, Galvanized	Severe Zn boil-off causes porosity
Steel, 300 Stainless	Welds well, except 3030 and 303SE, which crack
Steel, 400 Stainless	Generally welds somewhat brittle; may require pre- and post-weld heat treating
Steel, 17-4PH Stainless	Needs post-weld heat treating to strengthen
Tantalum	Ductile welds; special precautions against oxidation required
Titanium	Ductile welds; special precautions against oxidation required
Tungsten	Brittle welds; requires high energy
Zirconium	Ductile welds; special precautions against oxidation required.

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