



Materials for RenAM 500 series additive manufacturing systems

The open parameters of Renishaw's RenAM 500 series of Laser Powder Bed Fusion (LPBF) systems allow users to build additively manufactured (AM) parts from a wide range of metal powders. We have developed pre-optimised parameters for:

- Aluminium AlSi10Mg
- Aluminium AlSi7Mg
- Cobalt chrome Co28Cr6Mo
- Commercially pure copper CPCu
- H13 tool steel (DIN 1.2344)
- Nickel superalloy HX (DIN 2.4665)
- Inconel 625
- Inconel 718
- Maraging steel M300 (DIN 1.2709)
- Stainless steel 17-4PH (DIN 1.4542)
- Stainless steel 316L (DIN 1.4404)
- Superduplex steel (DIN 1.4410)
- Titanium Ti6Al4V grade 23

These materials can be processed in powder layer thicknesses from 30 µm up to 120 µm*. For information on material properties, see our material data sheets.

* Material dependent

Developing new materials with the RenAM 500 series

All RenAM 500 series systems use editable material build parameters, meaning you can adapt Renishaw's existing material files to your application or create new parameters for your own materials. Whether you follow our material development process outlined below or use your own method, all RenAM 500 series systems use the same gas flow and optics, giving you repeatable results at each stage of the process.



1

Lab — material prove out

Develop your early-stage material using Renishaw's Reduced Build Volume (RBV), a drop-in mini build platform that contains its own powder source and overflow for up to 0.75 litres of powder. The 78 mm x 78 mm build area is ideal for building test parts to confirm good weld quality and material properties.



2

Pre-production — part prove out

After finalising your material parameters with the RBV, the flexible powder system in the RenAM 500 Flex can quickly adopt the new material. The full-size build area can then be used to optimise your part design using the new material.



3

Factory — volume production

When your part is fully established, start high-volume production using the RenAM 500 or RenAM 500 Ultra systems. These models use the same gas flow and optics as the RenAM 500 Flex to maintain part quality, but feature automated powder recirculation and waste handling systems optimised for continuous production.

Material development software and support

Renishaw's QuantAM build prep software and Material Editor software have tools to help with material development. These include free access to our pre-optimised parameters, the ability to conduct Design of Experiments and visualisation tools that allow you to interrogate the entire laser toolpath before you print. The Renishaw team is always on hand to provide assistance during your material prove out process.

www.renishaw.com/am-materials



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