

Data Sheet: LPBF-Hastelloy® X

CHEMICAL COMPOSITION

Element	Ni	Cr	Fe	Mo	W	Mn	Ti	AL	Cu	C	Si	Co	B
Percentage	Bal.	20.5- 23	17-20	8 -10	0.2 -1	0-1	0 -0.15	0 -0.5	0-0.5	0 -0.1	0 -1	0.5 -2.5	0 -0.01

TOLERANCES FOR 1 – 5

Property	Unit	Value As Built
Achievable Part Accuracy ⁱ	mm	+/- 0.2 mm for parts up to 50 mm +/- 0.3 mm for parts 50-150 mm +/- 0.5 mm for parts 150-250mm +/- 1.5 mm for parts 250-500mm
Min. Wall thickness	mm	0.8

AVAILABLE FINISHES WITH SPECIFIC MECHANICAL PROPERTIES

1 | STANDARD

As built with support structure removal and media blasting.

Property	Yield Strength Rp 0.2% [MPa] ⁱⁱ	Ultimate Tensile Strength Rm [MPa] ⁱⁱ	Elongation at Break [%] ⁱⁱ	Young's Modulus [GPa] ⁱⁱ	Relative Density [%]
Value	520-695	660-890	25-40	155-235	>99.5%

2 | HEAT TREATED

As built with support structure removal and media blasting with additional solution annealing procedure conform to SAE AMS 2773 "Heat Treatment Cast Nickel Alloy and Cobalt Alloy Parts"

Solution annealing definition for Hastelloy® X: The alloy is annealed by heating to 1177°C for 60 minutes, followed by cooling rapidly to below 60°C. The strength of the part is substantially increased by this process.

Property	Yield Strength Rp 0.2 % [MPa] ⁱⁱ	Ultimate Tensile Strength Rm [MPa] ⁱⁱ	Elongation at Break [%] ⁱⁱ	Young's Modulus [GPa] ⁱⁱ	Relative Density [%]
Value	345-435	675-750	40-48	180-250	>99.5%

For other custom heat treatment options please select "custom" in the "finish" dropdown on the MakerVerse platform and specify your requirements to request a quote.

AVAILABLE FINISHES FOR SURFACE REQUIREMENTS

3 | POLISHED

As built with support structure removal and media blasting with additional manual polishing to achieve a homogeneous, smooth surface roughness. Surfaces that require polishing should be specified on the technical drawing or in the comment field on the MakerVerse platform.

4 | TUMBLED

As built with support structure removal and media blasting with additional mechanical tumbling to achieve a smoother surface roughness across all exposed surfaces of the part.

AVAILABLE FINISHES FOR COLOR REQUIREMENTS

5 | PAINTED

As built with support structure removal and media blasting with a color of choice applied to the part. Surfaces that require painting and the RAL color code should be specified on the technical drawing or in the comment field on the MakerVerse platform.

AVAILABLE FINISHES FOR ADDITIONAL REQUIREMENTS

6 | CNC MACHINED

As built with support structure removal and media blasting with additional CNC Machining to the required tolerances. The required tolerances should be specified on the technical drawing.

AVAILABLE COMBINATIONS OF FINISHES

Many finishes can be combined or tuned to specific requirements. Please select "custom" in the "finish" dropdown on the MakerVerse platform and specify your requirements to request a quote for alternative finishing options.

MAXIMUM BUILD CHAMBER SIZE

500 mm x 500 mm x 500 mm

Warranty/Disclaimer: The data from finished parts can deviate from above values depending on the manufacturing process and the component geometry. The data represents our present empirical values. It is incumbent on the person placing the order to examine whether it is suitable for its intended purpose, before using the product.

- i As a result of the part's geometry, strong tensions may cause distortion in the part which may lead to greater deviation.
- ii Depending on build direction.