

3D printing of metal elements in LPBF technology

Material data sheet

| Material Parameter | Stainless Steel AISI 316L | Stainless Steel AISI 316L | Maraging steel M300 | Aluminum alloy AlSi10Mg | Titanium alloy Ti6Al4V | Inconel 625 | Inconel 718 |
|--|------------------------------|------------------------------|------------------------|----------------------------|------------------------------|----------------|----------------|
| Post-Processing | As printed | Heat treated | As printed | As printed | As printed | As printed | As printed |
| Typical surface roughness (45°-90°) [Ra] | 18,3-8,6 | 18,3-8,6 | <30 | <16 | <16 | <16 | <16 |
| Ultimate tensile strength (vertical) [MPa] | 541±17 | 567±17 | 1950±35 | 345±15 | 1175±75 | 910±35 | 917±113 |
| Ultimate tensile strength (horizontal) [MPa] | 638±4 | 681±6 | 1950±30 | 340±15 | 1190±60 | 1000±50 | 1049±51 |
| Yield strength (vertical) [MPa] | 444±8 | 420±7 | 1890±32 | 200±25 | 1060±60 | 600±25 | 576±8 |
| Yield strength (horizontal) [MPa] | 500±4 | 497±6 | 1890±29 | 225±15 | 1100±50 | 725±25 | 769±60 |
| Youngs modulus (vertical) [GPa] | 158±8 | 179±9 | 170±7 | 67±5 | 113±3 | 145±10 | 124±10 |
| Youngs modulus (horizontal) [GPa] | 149±4 | 195±6 | 170±6 | 72±5 | 110±5 | 175±10 | 143±35 |
| Hardness | 209±3 HV | 193±2 HV | 443±9 HV | 119±5 HBW | 395±10 HV | 315±15 HV | 331±12 HV |

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