



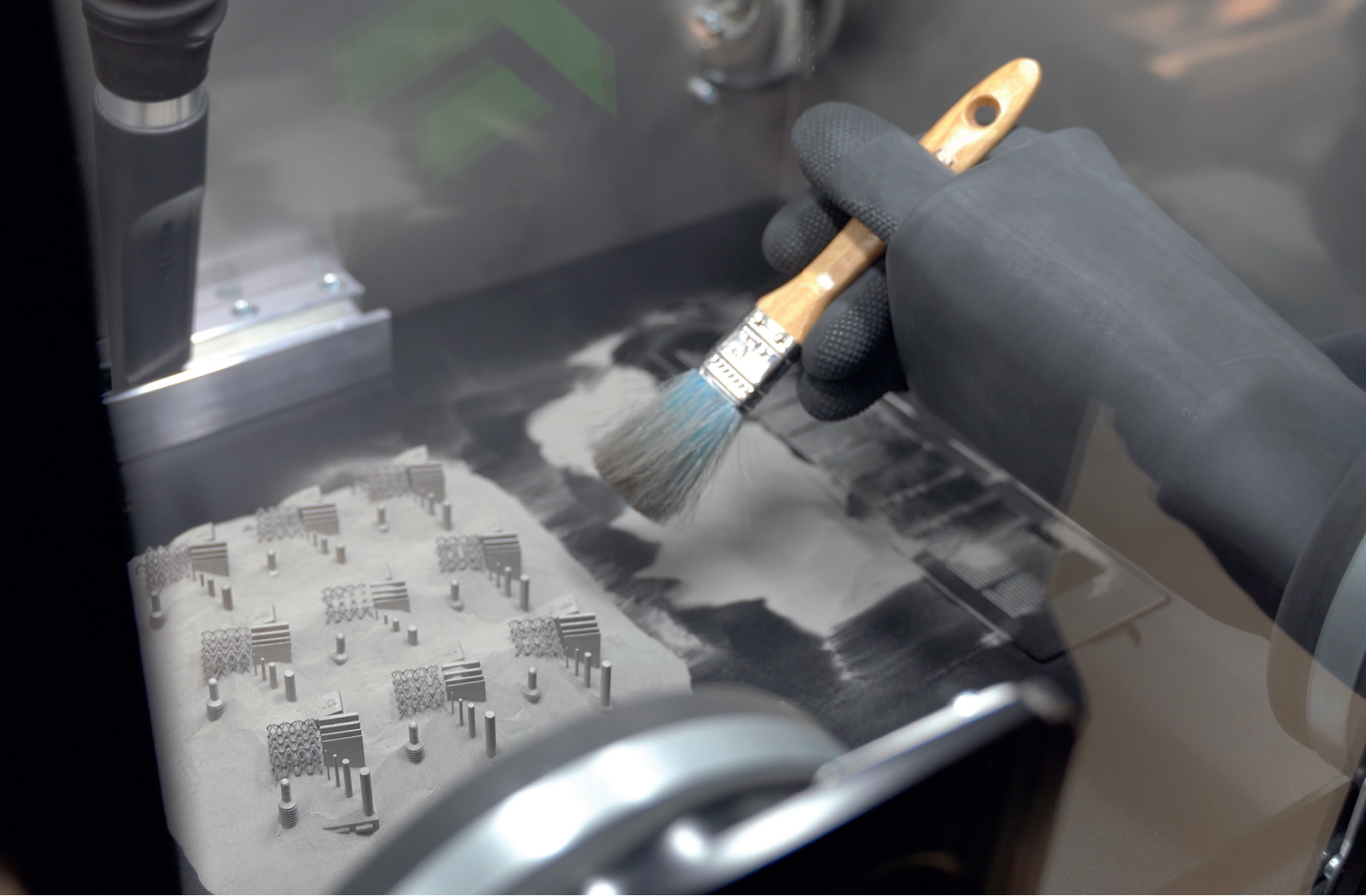
ONE CLICK METAL

**Stainless Steel 1.4542/17-4 PH**  
**40µm**

**MATERIAL**  
**DATA SHEET**

[www.oneclickmetal.com](http://www.oneclickmetal.com)

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## **Stainless Steel 1.4542/17-4 PH**

The material 1.4542/17-4 PH is a corrosion resistant high strength stainless steel. The presence of copper as alloying element facilitates the material to be hardened by heat treatment and age hardening methods. Due to the presence of Niobium in combination with reduced carbon content, the material is highly processable without compromising in hardness. The superior physical and chemical property of the material makes it an excellent choice for numerous applications.

### **Properties**

- High strength and toughness
- Good corrosion resistance
- Good processability
- Magnetic

### **Applications**

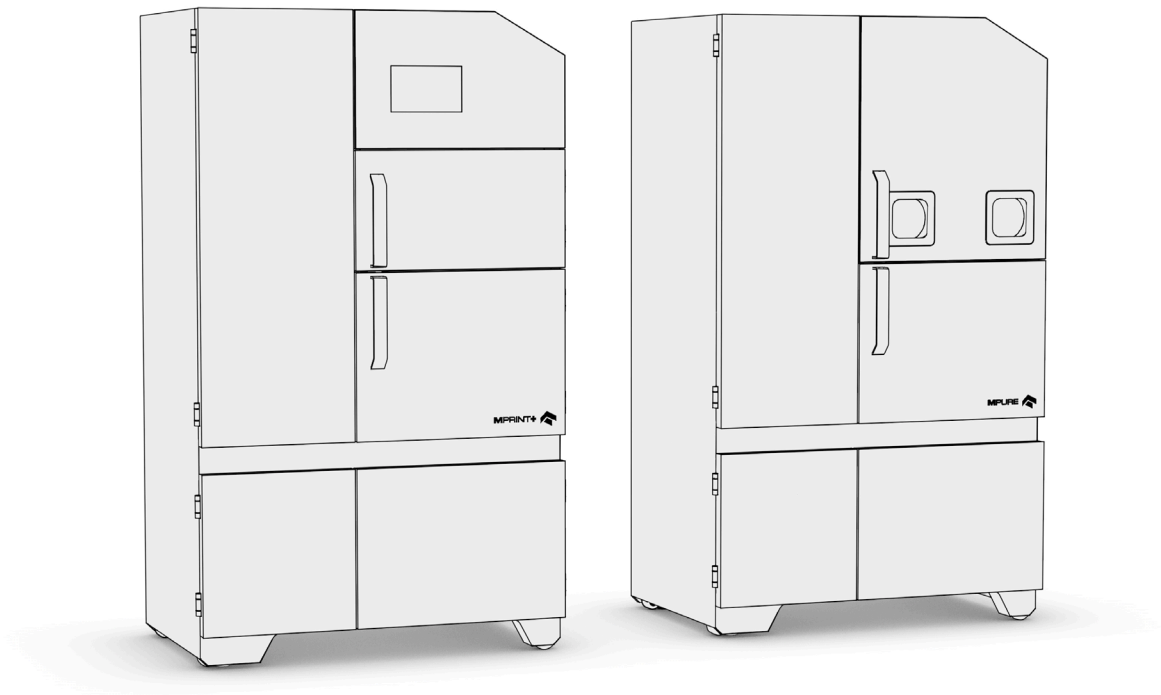
- Aviation and Aerospace
- Medical components
- Food and chemical industry
- Energy industry

## Powder properties

### Chemical Composition (wt.-%)

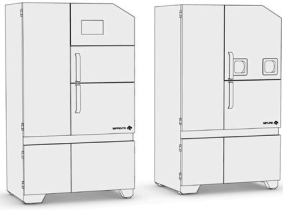
| Element | Min.    | Max. |
|---------|---------|------|
| C       | <0.07   |      |
| Si      | <1.0    |      |
| Mn      | <1.0    |      |
| Cr      | 15      | 17   |
| Ni      | 3       | 5    |
| Cu      | 3.5     | 5    |
| Nb      | <(5x%C) | 0.45 |
| Fe      | Balance |      |





## Process information

| System Set-up   | MPRINT               |
|-----------------|----------------------|
| Parameter       | 1.4542 /17-4 PH 40µm |
| Software        | Netfabb              |
| Powder part-no. | MSUPPLY 1.4542       |
| Layer thickness | 40µm                 |
| Coater          | X-Lip                |
| Inert gas       | Nitrogen             |
| Sieve           | 80µm                 |



## Physical and Mechanical Properties

In annealed condition the tensile strength of the material is ca. 1000 N/mm<sup>2</sup>. But based on the heat treatment method used, the tensile strength can increase to ca. 1370 N/mm<sup>2</sup>. It is optimal to limit the operation temperature up to 300°C, beyond which the material behaviour varies based on the method of heat treatment.

### Physical properties

| Defects            | Result |
|--------------------|--------|
| Average defect (%) | <0.1   |

### Surface quality (measured along the z-axis)

| As built | Ra [µm] | 5  |
|----------|---------|----|
|          | Rz [µm] | 24 |
| Blasted  | Ra [µm] | 2  |
|          | Rz [µm] | 11 |

### Mechanical properties ISO6892-1

| Vertical                       | Yield strength<br>Rp0.2 [MPa] | Tensile strength<br>Rm [MPa] | Elongation at<br>break A [%] | Reduction of<br>area Z [%] |
|--------------------------------|-------------------------------|------------------------------|------------------------------|----------------------------|
| Average                        | 605                           | 1220                         | 16                           | 53                         |
| Absolute Standard<br>Deviation | 21                            | 5                            | 2                            | 9                          |
| Relative Standard<br>Deviation | 3                             | 0.4                          | 12                           | 16                         |