3DLASERBW

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# Datasheet
# 1.4404

## Description

The iron-based alloy 1.4404 is characterized by high tensile strength and corrosion resistance. It can be used in many areas, e.g., in watch and jewelry manufacturing, in the medical field for surgical aids, endoscopy, and orthopedics, or in aerospace for the manufacture of fasteners. The components can be further processed or polished afterwards.
The use of components made of 1.4404 is not suitable in a temperature range from 427 °C to 816 °C because chromium carbides are precipitated at these temperatures. Due to the layer-by-layer build-up process, the components exhibit a certain anisotropy, which is reflected in their mechanical properties.

## Properties & Application

- Good corrosion resistance, high tensile strength, machine finishing possible
- Meets the requirements of ASTM F138 (“Standard Forging Quality for 18Cr-14Ni-2.5MO Stainless Steel Parts and Wire for Surgical Implants, UNS S31673”)
- For watch and jewelry manufacturing, aerospace, automotive industry, food and chemical plants

| Chemical Composition (in wt.-%) | | | |
|---|---|---|---|
| **Cr** | 17,9 - 19,0 | **Ni** | 13,0 -15,0 |
| **Mo** | 2,25 - 3,0 | **C** | ≤ 0,030 |
| **Mn** | ≤ 2,0 | **Cu** | ≤ 0,50 |
| **P** | ≤ 0,025 | **S** | ≤ 0,010 |
| **Sl** | ≤ 0,75 | **N** | ≤ 0,10 |
| **Fe** | Remaining | | |

| Physical properties | |
|---|---|
| **Relative density** | approx. 100% |
| **Density** | 7,9 g/cm³ |

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## Mechanical properties of components at room temperature

| | | as built |
|---|---|---|
| **tensile strength [N/mm²][1]** | | |
| | horizontal direction (XY) | 640 ± 50 MPa |
| | vertical direction (Z) | 540 ± 55 MPa |
| **yield strength [N/mm²]1** | | |
| | horizontal direction (XY) | 530 ± 60 MPa |
| | vertical direction (Z) | 470 ± 90 MPa |
| **elongation at break [%]** | | |
| | horizontal direction (XY) | 40 ± 15 % |
| | vertical direction (Z) | 50 ± 20 % |
| **Young's Modulus [kN/mm²]** | | |
| | horizontal direction (XY) | typ. 185 GPa |
| | vertical direction (Z) | typ. 180 GPa |
| **Hardness [HRC][2]** | | typ. 89 HRB |

[1]Tensile test according to ISO 6892/ASTM EBM

[2]Rockwell hardness (HRB) measurement according to EN ISO 6508-1 on polished surface

**Note:**
The specified material properties depend on the machine, powder material, parameter settings, and other factors such as the anisotropy of the components.
They therefore do not provide a sufficient basis for component design. These specifications are for reference purposes only.

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