

CL 42TI Commercially Pure Titanium

Commercially Pure Titanium in powder form, chemical composition includes ASTM F67 and ASTM B348 grade 2

CL 42TI is a titanium alloy used in the manufacture of implants for the medical industry as well as in lightweight components for the aviation industry.

22
Ti
47,88



CHEMICAL COMPOSITION

| Component | Indicative value (%) |
|-----------|----------------------|
| Ti | Balance |
| Fe | 0 – 0,30 |
| O | 0 – 0,25 |
| C | 0 – 0,08 |
| N | 0 – 0,03 |
| H | 0 – 0,015 |

RANGE OF APPLICATION

Prototypes, one-off or series parts for the aviation, aerospace and medical industries, for example functional components with an integrated cooling structure, bionically optimized functional components, bone foam with a bioanalog structure as bone replacement material, individual biocompatible implants or prostheses with a microcellular structure.

TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

| | |
|---|--|
| Yield strength ¹ | 530 – 570 N/mm ² |
| Tensile Strength R _m ¹ | 600 – 620 N/mm ² |
| Elongation A ^{1,2} | 15,5 – 20 % |
| Young's modulus ¹ | 110 kN/mm ² |
| Thermal conductivity λ ³ | 21 W/mK |
| Coefficient of thermal expansion ³ | 8,9 · 10 ⁻⁶ K ⁻¹ |

¹ Tensile test at 20°C according to DIN EN 50125.

² Special heat treatment can produce a higher elongation on fracture.

³ Specification according to the material manufacturer's data sheet.

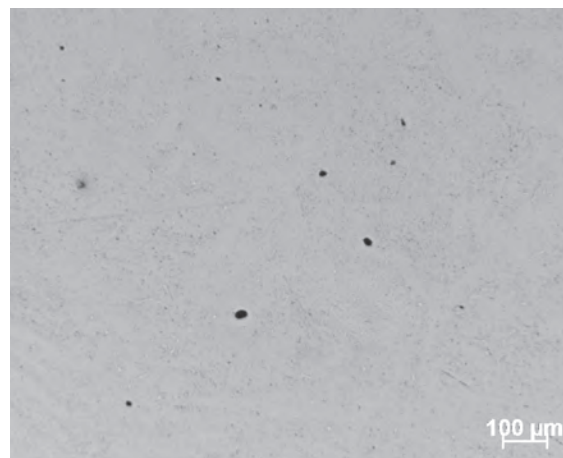
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MICROSECTION

Test piece
(x 20 magnification)



Test piece
(x 100 magnification)



HEAT TREATMENT

Carry out heat treatment in argon atmosphere.
 Heat to 1000 °C in 4 hours. Maintain temperature
 for 1 hour. Let components cool to 70 °C in oven.

MICROSTRUCTURE

Components from the titanium alloy CL 42Ti show a
 homogenous, dense structure following construction
 with the LaserCUSING® metal laser melting process.

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