

CONCEPTLASER

a GE Additive company

CL 42TI Commercially Pure Titanium

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

With an appropriate approval* CL 42TI can be 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 (%)
Fe	0 - 0,30
O	0 - 0,25
C	0 - 0,08
N	0 - 0,03
H	0 - 0,015
Ti	Balance

LaserCUSING® | Source: Fraunhofer IWU



GE Additive

www.ge.com/additive

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 Commercially
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All of the specified figures are approximate figures. The figures which are provided reflect the current level of our knowledge and are dependent on process and machine parameters. The information provided on this material data sheet is therefore not binding and is not deemed to be certified.

* The approval is branch-specific and/or application-specific and it must be, therefore, carried out by the consumer/user. Approval of materials by Concept Laser GmbH is not available.

RANGE OF APPLICATION

With an appropriate approval* CL 42TI can be used for 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 $R_{p0,2}^1$	550 ± 20 N/mm ²
Tensile Strength R_m^1	610 ± 10 N/mm ²
Elongation A ^{1,2}	18 ± 2 %
Young's Modulus ¹	110 kN/mm ²
Thermal Conductivity λ^3	21 W/mK
Coefficient of thermal Expansion (at rt) 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.

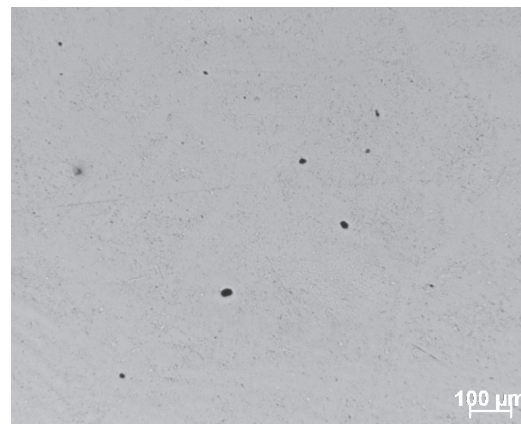
³ Specification according to the material manufacturer's data sheet.

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.