

CL 41TI ELI Titanium alloy

Titanium alloy Ti6Al4V (powder) chemical composition et al. according to ASTM F136-02a (ELI Grade 23)

CL 41TI ELI is a titanium alloy for the production of lightweight components in the field of motorsport and aerospace industries as well as implants in the medical technology field.

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Ti

47,88

CHEMICAL COMPOSITION

Component	Indicative value (%)
Ti	Balance
Al	5,5 - 6,5
V	3,5 - 4,5
Fe	0 - 0,25
C	0 - 0,08
O	0 - 0,13
N	0 - 0,05
H	0 - 0,012

Source: Nanyang Polytechnic

RANGE OF APPLICATION

The material is used for manufacturing lightweight prototypes, unique or series production parts in the field of motorsports and aerospace industries as well as medical technology.

Examples of application: components with integrated cooling structure, bionic components and bone-foams with bio-analogue structure.

TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

Yield Point R_e^1	900 - 1.200 N/mm ²
Tensile Strength R_m^1	1.100 - 1.300 N/mm ²
Elongation A ^{1,2}	5-10 %
Young's modulus ³	approx. $110 \cdot 10^3$ N/mm ²
Thermal conductivity λ^3	7 W/mK
Coefficient of thermal expansion ³	$9 \cdot 10^{-6}$ K ⁻¹

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

² By using a special heat treatment a higher elongation can be achieved.

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

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Titanium alloy

MICROSECTION

Test piece (x 20 magnification)



Test piece (x 100 magnification)



HEAT TREATMENT

Perform heat treatment under an argon atmosphere. Heat up in 4 hours to 840°C. Maintain temperature for 2 hours. Allow the components to cool down to 500°C in the oven.

MICROSTRUCTURE

Components made from titanium alloy CL 41TI ELI display a homogeneous, dense structure after they are manufactured by means of the metal laser melting process LaserCUSING®.

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