

CONCEPTLASER

a GE Additive company

CL 41TI ELI Titanium alloy

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

With an appropriate approval* CL 41TI ELI can be used for the production of lightweight components in the field of motorsport and aerospace industries as well as implants in the medical technology field.

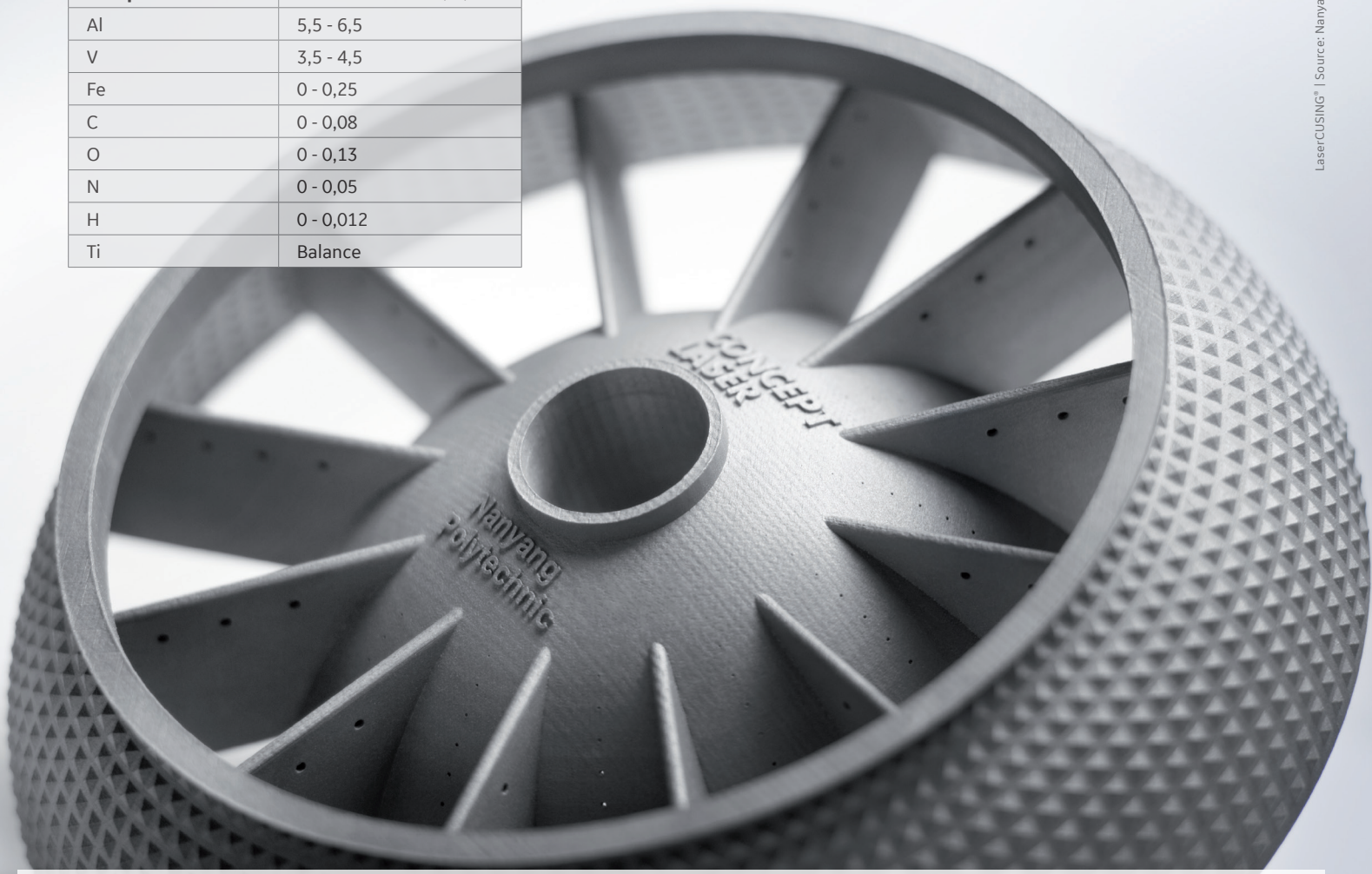
22

Ti

47,88

CHEMICAL COMPOSITION

Component	Indicative value (%)
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
Ti	Balance



LaserCUSING® | Source: Nanyang Polytechnic

RANGE OF APPLICATION

With an appropriate approval* CL 41Ti ELI can be 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

	90° (horizontal)	45° (polar angle)	0° (upright)
Yield Strength $R_{p0,2}^1$	1035 ± 9 N/mm ²	1062 ± 4 N/mm ²	989 ± 10 N/mm ²
Tensile Strength R_m^1	1092 ± 12 N/mm ²	1106 ± 2 N/mm ²	1071 ± 8 N/mm ²
Elongation A ^{1,2}	10 ± 1 %	11 ± 1 %	9 ± 1 %
Young's Modulus ³	approx. 110 · 10 ³ N/mm ²	approx. 110 · 10 ³ N/mm ²	approx. 110 · 10 ³ N/mm ²
Thermal Conductivity λ^3	7 W/mK	7 W/mK	7 W/mK
Coefficient of thermal Expansion (at rt) ³	9 · 10 ⁻⁶ K ⁻¹	9 · 10 ⁻⁶ K ⁻¹	9 · 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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MICROSECTION

Test piece (x 20 magnification)



Test piece (x 100 magnification)



STRESS RELIEF 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®.

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.



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