

Ti6Al4V - (ELI Grade 23) - Titanium alloy

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

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.



CHEMICAL COMPOSITION

Component	Indicative value (%)
Ti	Balance
Al	5,5 - 6,5
V	3,5 - 4,5
Fe	0 - 0,25
C	0 - 0,8
O	0 - 0,13
N	0 - 0,05
H	0 - 0,012

TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

Yield Point R_{e1}	900 - 1.200 N/mm ²
Tensile Strength R_m	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

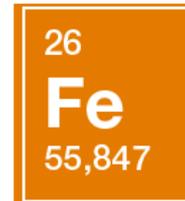
¹ Tensile test at 20°C according to DIN EN 50125

² By using a special heat treatment a higher elongation can be achieved. ³ Specification according to the material manufacturer's data sheet.

316L - Stainless Steel

Stainless steel (powder), chemical composition according to 1.4404, X 2 CrNiMo 17 13 2, 316L

an austenitic stainless steel for the production of functional parts or components for pre-production moulds.



CHEMICAL COMPOSITION

Component	Indicative value (%)
Fe	Balance
Cr	16,5 - 18,5
Ni	10,0 - 13,0
Mo	2,0 - 2,5
Mn	0 - 2,0
Si	0 - 1,0
P	0 - 0,045
C	0 - 0,030
S	0 - 0,030

TECHNICAL DATA

Yield Point R_{e1}	470 N/mm ²
Tensile Strength R_m	570 N/mm ²
Elongation A ^{1,2}	> 15 %
Young's modulus ³	approx. $200 \cdot 10^3$ N/mm ²
Thermal conductivity λ ³	approx. 15 W/mK
Hardness ⁴	20 HRC

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.

⁴ Hardness test according to DIN EN ISO 6508

AlSi12(a) & AlSi10Mg(b) - Aluminium alloy

Aluminium alloy (powder), chemical composition according to DIN EN 1706 AlSi12(a), according to DIN EN 1706 AlSi10Mg(b).

AlSi 10 and AlSi12 are common aluminium alloys for manufacturing lightweight components in the field of automotive and aerospace industries.



CHEMICAL COMPOSITION

	AlSi12	AlSi10
Component	Indicative value (%)	Indicative value (%)
Al	Balance	Balance
Si	10,5 - 13,5	9,0 - 11,0
Mg	0 - 0,05	0,20 - 0,45
Fe	0 - 0,55	0 - 0,55
Mn	0 - 0,35	0 - 0,45
Ti	0 - 0,15	0 - 0,15
Cu	0 - 0,05	0 - 0,10
Zn	0 - 0,10	0 - 0,10
C	0 - 0,05	0 - 0,05
Ni	0 - 0,05	0 - 0,05
Pb	0 - 0,05	0 - 0,05
Sn	0 - 0,05	0 - 0,05

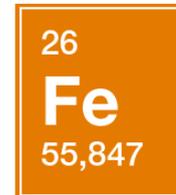
TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

Yield Point R_{e1} ¹	170 - 220 N/mm ²
Tensile Strength R_m ¹	310 - 325 N/mm ²
Elongation A ¹	2 - 3 %
Young's modulus ²	approx. $75 \cdot 10^3$ N/mm ²
Thermal conductivity λ ²	120 - 180 W/mK
Coefficient of thermal expansion (at rt) ²	$20 \cdot 10^{-6} K^{-1}$

Maraging - Hot-work steel

Hot-work steel 1.2709 (powder)

powder material for the production of components for tool inserts with conformal cooling. These tool inserts can be used for series injection moulding as well as for die-casting. Furthermore the material can also be used for functional components.



CHEMICAL COMPOSITION

Component	Indicative value (%)
Fe	Balance
C	≤ 0,03
Si	≤ 0,10
Mn	≤ 0,15
P	≤ 0,010
S	≤ 0,010
Cr	≤ 0,25
Mo	4,50 - 5,20
Ni	17,0 - 19,0
Ti	0,80 - 1,20
Co	8,50 - 10,0

TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

Yield Point R_{e1} ¹	1.550 N/mm ²
Tensile Strength R_m ¹	1.650 N/mm ²
Elongation A ^{1,2}	2-3 %
Young's modulus ³	approx. $200 \cdot 10^3$ N/mm ²
Thermal conductivity λ ³	approx. 20 W/mK
Hardness ⁴	up to 52 HRC

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.

⁴ Hardness test according to DIN EN ISO 6508

INCONEL 718 - Nickel-based alloy

Nickel-based alloy powder (Inconel 718),

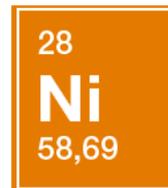
chemical composition according to ASTM B 637 UNS 07718

powder material is a nickel-based alloy for the production of components for high-temperature applications.

for functional components.

CHEMICAL COMPOSITION

Component	indicative value (%)
Ni	50.0-55.0
Cr	17.0-21.0
Nb	4.75-5.50
Mo	2.80-3.30
Ti	0.65-1.15
Al	0.20-0.80
Co	0.0-1.0
C	0.0-0.08
Mn	0.00-0.35
Si	0.00-0.35
P	0.000-0.015
S	0.000-0.015
B	0.000-0.006
Cu	0-0.3



TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

Yield point $R_{p0.2}$ ¹	1000 – 1100 N/mm ²
Tensile Strength R_m ¹	1250 – 1350 N/mm ²
Elongation A ¹	8 – 12 %
Young's modulus ¹	approx. 200.000 N/mm ²
Thermal conductivity λ ²	approx. 12 W/mK
Coefficient of thermal expansion ²	approx. $13 \cdot 10^{-6} K^{-1}$

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

² Specification according to the material manufacturer's data sheet.

Pour de l'application plus spécifique, Le Bronze, l'or et L'argent sont aussi applicable sur notre machine,

Et le Magnésium est en cours d'étude,