straumann

MATERIAL INFORMATION

Technical handling information

490.019.indd 1 08/03/2024 12:21

MATERIAL INFORMATION

THE PROPERTIES OF UNALLOYED GRADE 4 TITANIUM FOR IMPLANTS AND ABUTMENTS

Chemical composition					
O	**Fe**	**C**	**N**	**H**	**Ti**
0.40 % max.	0.50 % max.	0.10 % max.	0.05 % max.	0.012 % max.	Balance

Mechanical properties			
	Strength	**Elongation**	**Modulus of elasticity**
Forged/annealed	550 MPa min.	15% min.	110 GPa
Cold-worked	680 MPa min.	10% min.	110 GPa
Ti-N = titanium nitride-coating	Process: Layer thickness: Color:	PVD (physical vapor deposition) 3–12 µm Golden yellow	

Technical information
Grade 4 titanium conforms to the ISO5832-2 standard

THE PROPERTIES OF STRAUMANN® ROXOLID® IMPLANTS

Roxolid® is an alloy made of titanium and zirconium.

Mechanical properties			
	Strength	**Elongation**	**Modulus of elasticity**
Roxolid®	850 MPa min.	12 % min.	98 GPa

STRAUMANN® PURE CERAMIC IMPLANT

Mechanical properties			
Property	**Unit**	**Titanium grade 4**	**Y-TZP**
Density	g/cm³	4.5	6.05
Hardness	HV	250	1100 – 1500
Strength	MPa	680 (tensile)	≥ 1200 (4-point bending strength)
Mod. of elasticity	GPa	110	200 – 220

490.019.indd 2 08/03/2024 12:21

THE PROPERTIES OF THE ALLOY TITANIUM ALUMINIUM-6NIOBIUM-7(TAN) FOR STRAUMANN® ABUTMENTS

Chemical composition

Al	Nb	Ta	Fe	O	C	N	H	Ti
5.5 – 6.5 %	6.5 – 7.5 %	0.50 % max.	0.25 % max.	0.20 % max.	0.08 % max.	0.05 % max.	0.009 % max.	Balance

Mechanical properties

	Strength	Elongation	Modulus of elasticity
Annealed	900 MPa min.	10 % min.	110 GPa

Technical information

The alloy Titanium Aluminium-6Niobium-7(TAN) conforms to the ISO5832-11 standard

Alloys			Ceramicor®	Elitor®
Color			white	yellowish
Composition	Au Pt Pd Ag Cu Ir Others	% % % % % % + = < 1 %	60.0 19.0 20.0 – – 1.0	68.6 2.5 4.0 11.8 10.6 + Zn 2.5
Melting range		°C °F	1400 – 1490 2552 –2714	880 – 940 1616 – 1724
Coefficient of thermal expansion		CTE°C CTE°F	25 – 500°C = 11.9 µm/m X °C 25 – 600°C = 12.2 µm/m X °C 77 – 932°F = 11.9 µm/m X °F 77 – 1112°F = 12.2 µm/m X °F	
Hardness in as-delivered condition		HV5	> 215	260
Hardness after casting-on or soldering		HV5	205 self-hardening	> 260 self-hardening
Hardened		HV5	205	275
0.2 % Proof stress (Rp 0.2 %) as-delivered condition		N/mm^2	> 750	780
0.2 % Proof stress (Rp 0.2 %) after casting-on or soldering		N/mm^2	> 650	655
Possibilities for metallic bonding			casting-on or soldering	soldering
Technical information Applications			Non-oxidizing alloy for casting-on with precious metal alloys or for soldering with precious metal or non-precious metal alloys	Alloy for construction elements Attachments

Alloys			Esteticor® Cosmor H
Color			pale yellow
Composition	Au+Pt-Metals	%	96.5
	Au	%	78.5
	Pt	%	10.0
	Pd	%	7.8
	In	%	3.5
	Ir	%	0.2
Melting range		°C	1120 – 1280
		°F	2048 – 2336
Coefficient of thermal expansion		CTE°C	25 – 500 °C = 13.8 µm/m X °C 25 – 600 °C = 14.0 µm/m X °C
		°F	77 – 932 °F = 13.8 µm/m X °F 77 – 1112 °F = 14.0 µm/m X °F
			ISO 9693 pos. 6.3.3.3 positive
Hardness after firing		HV5	215
Tensile strength (Rm) after firing		N/mm²	705
0.2 % Proof stress (Rp 0.2 %) after firing		N/mm²	565
Elongation at break (A5) after firing		%	13
Density		g/cm²	18.2
Technical information Applications			Low oxidation Alloy corresponds to ISO 9693 standard

International Headquarters
Institut Straumann AG
Peter Merian-Weg 12
CH-4002 Basel, Switzerland
Phone +41 (0)61 965 11 11
Fax +41 (0)61 965 11 01
www.straumann.com

490.019/en/B/00 02/24

© Institut Straumann AG, 2024.
Straumann® and/or other trademarks and logos from Straumann® mentioned herein are the trademarks or registered trademarks of Straumann Holding AG and/or its affiliates. All rights reserved.

490.019.indd 4 08/03/2024 12:21