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Digital Material Passport

ID	DMP-METAL-005	Version	1.0.0
Issue Date	2025-05-17	Certificate Type	EN 10204 3.1

Business Transaction

Order		Delivery	
Order ID	PO-23456	Delivery ID	DN-65432
Position	1	Position	1
Date	2025-05-01	Date	2025-05-16
Quantity	1000 kg	Quantity	1000 kg

Product Information

Product Name	Titanium Alloy Ti-6Al-4V ELI
Batch ID	T-65432-01
Surface Condition	Machined
Production Date	2025-05-15
Country of Origin	DE

Product Norms

Designation	ASTM F136 (2022)
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Material Designations

System	UNS
Designation	R56401

Product Shape

Form	RoundBar
Length	3000 mm
Diameter	30 mm

Chemical Analysis

Heat Number	T-65432
Melting Process	VAR
Casting Date	2025-05-14
Casting Method	VacuumCasting
Sample Location	Product

Elements

Symbol	Ti	Al	V	Fe	O	C	N	H
Unit	%	%	%	%	%	%	%	ppm
Min	-	5.5	3.5	-	-	-	-	-
Max	-	6.5	4.5	0.25	0.13	0.08	0.05	120
Actual	89.32	6.02 ± 0.05	3.95 ± 0.03	0.18	0.11	0.026	0.012	35

Mechanical Properties

Property	Symbol	Actual	Minimum	Maximum	Method	Status
Fatigue Test					ASTM E466	✓
Room temperature, R = 0.1						
Cycles (N)		10000	50000	100000	500000	1000000
Value		650	635	610	590	570
						550
Notch Sensitivity		0.85 - 0.92			Internal Method TS-5432	✓

Physical Properties

Property	Symbol	Actual	Target/Min	Maximum	Method	Status
Density		4.43 ± 0.01g/cm³	4.43g/cm³	-	ASTM B311	✓

Supplementary Tests

Property	Actual			Target/Min	Maximum	Method		Status
Microstructure Examination	Equiaxed alpha with intergranular beta			-	-	ASTM E407		✓
Ultrasonic Inspection	Yes <small>No indications greater than reference standard</small>			-	-	ASTM E2375		✓
Surface Quality Assessment	Class 1 - Medical Grade			-	-	Visual Inspection per ASTM F136		✓
Alpha Case Depth	5µm			-	25µm	Microhardness Traverse		✓
Grain Size Distribution	8 - 10ASTM No.			7 - 12ASTM No.	-	ASTM E112		✓
Hardness Profile	Array data (see below)			-	-	ASTM E384		✓
Distance from - surface (mm)	0.1	0.5	1.0	2.0	3.0	5.0	10.0	15.0
Value [HV]	345	350	352	350	349	348	351	347

Validation

We hereby certify that the material described above has been manufactured and tested in accordance with ASTM F136 and meets all requirements for surgical implant applications.

Validated By

Name	Title	Department	Date
Dr. Markus Weber	Head of Metallurgy	Research & Quality	2025-05-17