

Manufacturer
ACME Metal Works GmbH
Industrial Park 123
52066 Aachen
DE
quality@acme-metal.example.com

Customer

European Research Institute
Science Boulevard 42
75015 Paris
FR
materials@eri.example.org

Digital Material Passport

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

Business Transaction

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

Product Information

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

Product Norms

<i>Standard</i>	ASTM F136 (2022)
-----------------	------------------

Material Designations

<i>Number (UNS)</i>	R56401
---------------------	--------

Product Shape

<i>Form</i>	RoundBar
<i>Length</i>	3000 mm
<i>Diameter</i>	30 mm

Chemical Analysis

<i>Heat Number</i>	T-65432
<i>Melting Process</i>	VAR
<i>Casting Date</i>	2025-05-14
<i>Casting Method</i>	VacuumCasting
<i>Sample Location</i>	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 Room temperature, R = 0.1					ASTM E466	✓
Cycles (N)		10000	50000	100000	500000	1000000
Value		650	635	610	590	570

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 No indications greater than reference standard	-	-	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	2	3	5	10	15
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