ACME METALS

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

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)

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 Room temperature, R = 0.1					ASTM E466	✓

Cycles (N)	10000	50000	100000	500000	1000000	10000000
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 ± 0.01 g/cm³	4.43	-	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	5 µm	-	25	Microhardness Traverse	✓
Grain Size Distribution	8 - 10 ASTM No.	7 - 12	-	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

Data schema maintained by Material Identity. https://schemas.materialidentity.org/metals-schemas/v0.1.0/schema.json