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METALLOGRAPHIC PREPARATION OF A TITANIUM ALLOY

Objective:

The sample should be examined for homogeneous distribution of the structure. The samples were separated (Qcut 250 A), hot mounted (Qpress 40) and prepared (Qpol 300 AI Eco+). Detailed parameters and images can be found in the following application laboratory report.

CUTTING

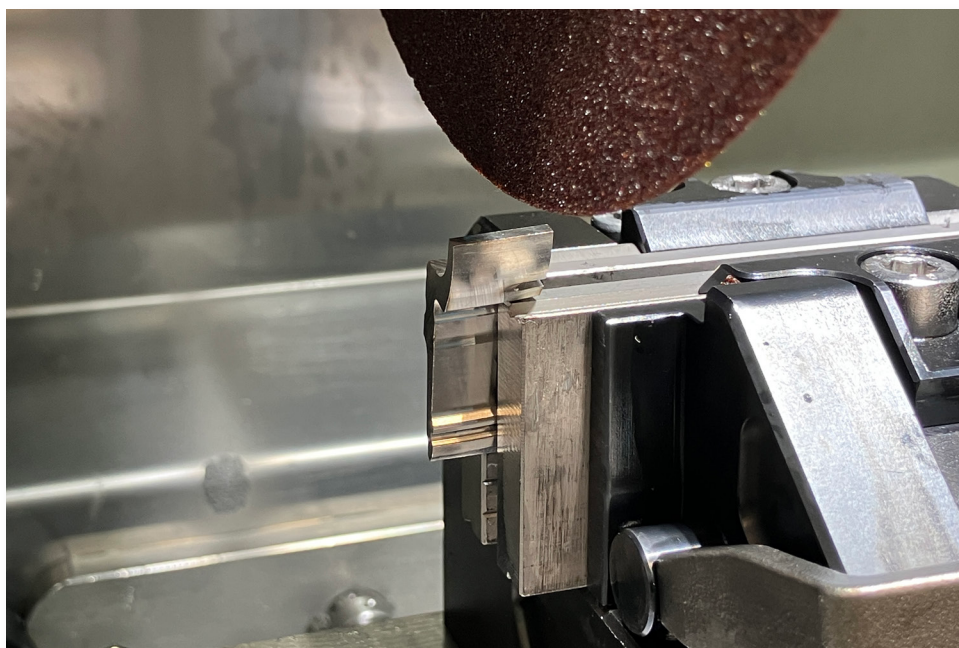


Cut-off machine
Qcut 250 A

Device	Qcut 250 A	
Cut-off wheel	Silicon carbide, resin-bonded Ti-A250SC	Item no.: 92002417
Coolant and anti-corrosion agent	Coolant and anti-corrosion agent QATM CoolCut	Item no.: 95004146
Clamping tool	- Qtool 60	Item no.: Z2235200
	- Easy clamping plate M	Item no.: Z2236035
Cutting method	Horizontal cut (X-axis)	
Parameter	- Feeding speed	0.2 mm/s
	- Pulse setting	Without pulse
	- Rotational speed of cut-off wheel	3015 rpm

Notes

Cutting the sample



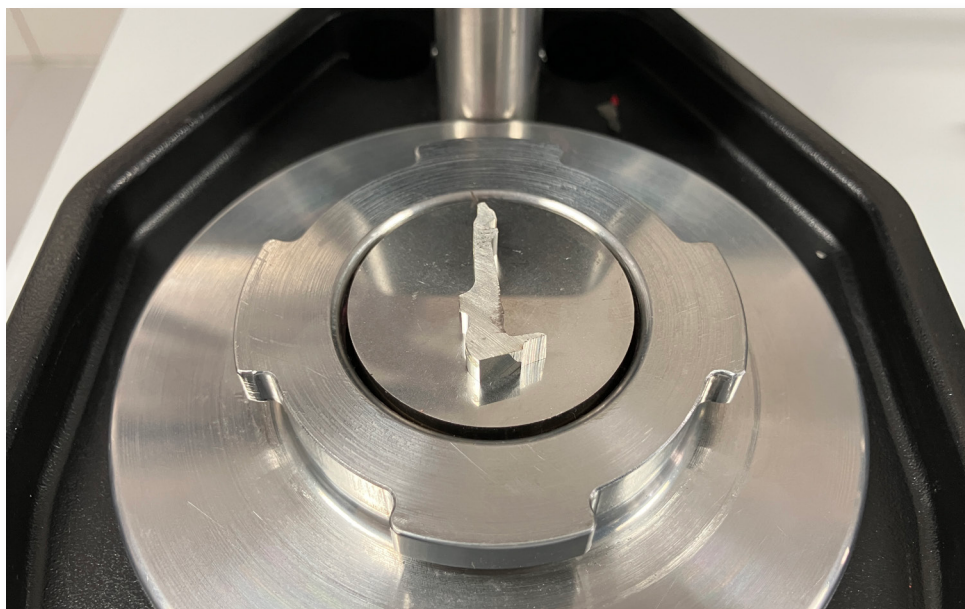
HOT MOUNTING



Hot mounting press Qpress 40

Device	Qpress 40
Mounting material	BAKELIT BLACK
Heating time	3:30 min
Temperature	180 °C
Pressure	250 bar
Cooling time	3:00 min
Accessories	-
Heat set up	100%
Pressure mode	Pressure from Start
Cooling set up	100%
Mould assembly	Ø 40 mm

Sample in the hot mounting press





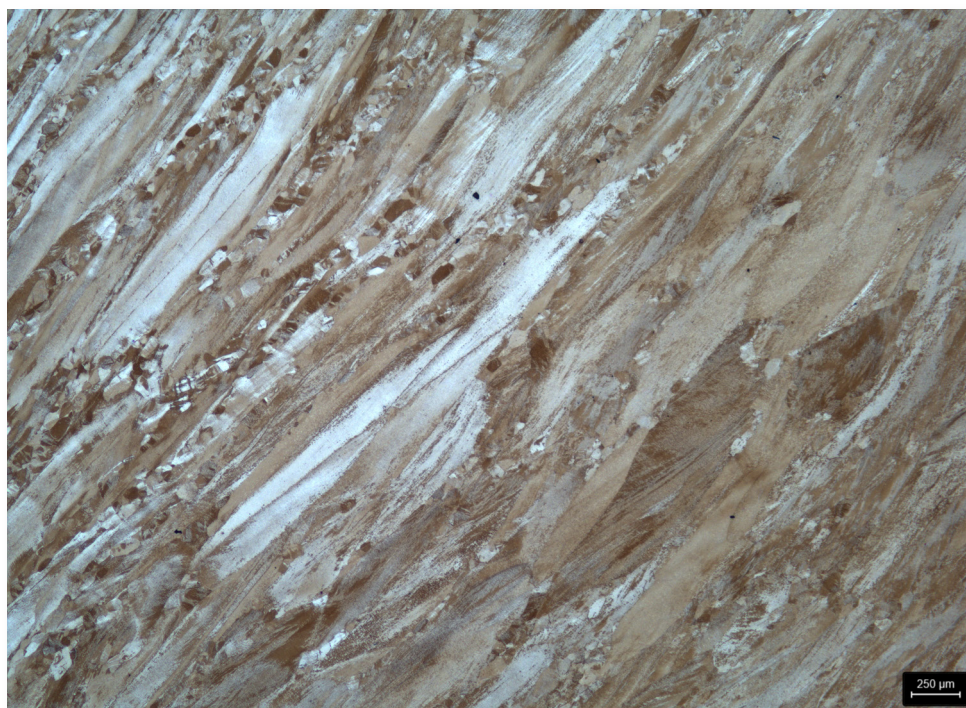
Automatic grinding and polishing machine Qpol 300 A1 Eco+

GRINDING/POLISHING

Device	Qpol 300 A1 Eco+	
Sample holder	6 x Ø 40 mm	Item no.: Z5446025
Pressure	Single pressure	

STEP	MEDIUM		 rpm	 rpm	 Single pressure N	 min
 Grinding	Galaxy green	H ₂ O	250	120 ►► Synchronous Rotation	35	2:00
 Pre-Polishing	BETA	Dia. suspension Wb. Poly, 9 µm + alc. Lubricant	150	120 ►► Synchronous Rotation	35	6:00
 Fine polishing	OMEGA	EPOSIL F 0.1 µm + H ₂ O ₂	100	90 ◄◄ Counter Rotation	40	8:00 (Rinsing time: 20 s)
 Etching (chem.)	Etchant Kroll					0:30
Notes	- Pre-dosing for 9 µm and final polishing: 3 s - Dosing interval and dosing time for Dia. suspension 9 µm: Each 30 s for 1,3 s - Dosing interval and dosing time for final polishing suspension: Each 20 s for 1,3 s - The microscopic images were taken with a Leica DM8000 optical microscope					

The microstructure of titanium alloy under the light microscope – 25:1



The microstructure of titanium alloy
under the light microscope – 100:1



The microstructure of titanium alloy
under the light microscope – 200:1

