

Application lab report

Preparation of graphite samples



QATM-Preparation method

Objective:

In this report shows the preparation of 2 graphite samples (Figure 1 and 2). One sample is a graphite cylinder, and the other one is a surface coated graphite plate. The samples were cut on Qcut 150 A. Further preparation steps (in gray font) are purely a recommendation.

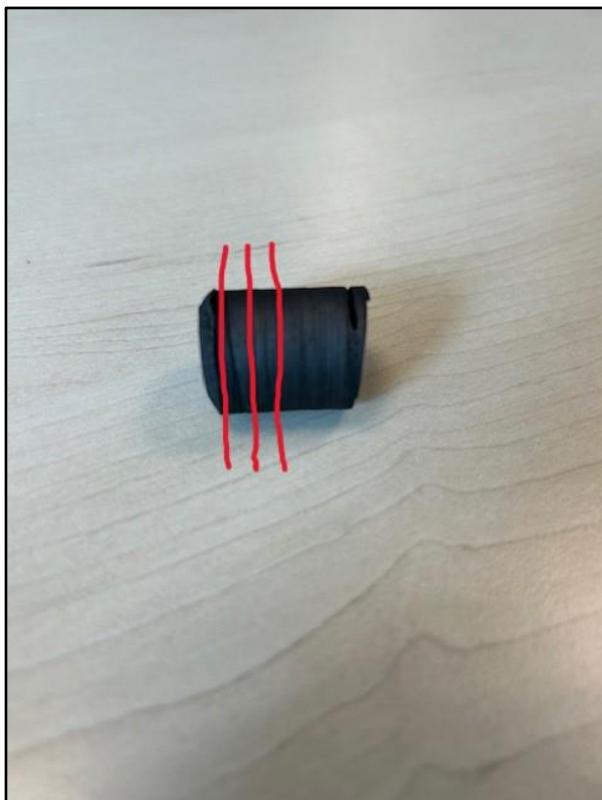


Figure 1: As-received sample – graphite cylinder.

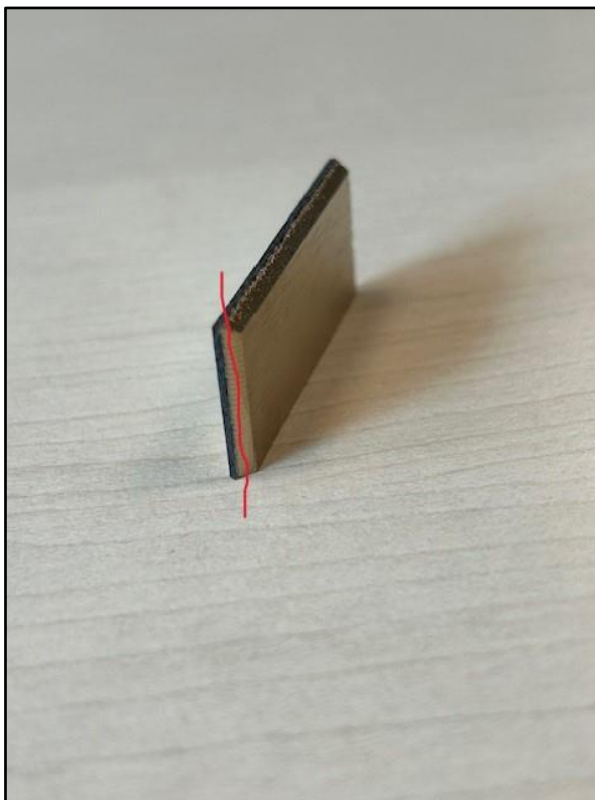


Figure 2: As-received sample – graphite plate with surface coating.

QATM-Preparation method

Cutting – graphite cylinder

		Cutting		
Device		Cut-off disc	Anti-corrosion coolant	Clamping tool
Qcut 150 A		Diamond cut-off disc 92002410	Coolant Standard 95014281	- Clamping arm L Z1870031 - Drop shape sample holder Z1870045 Option: - Rotation device RD1 Z1870059 - Holder clamp vices ø 50 mm Z2236043 - Sample holder standard L Z1870035 - Reduction ring ø 25 mm Z1870064
Cutting method				
Automatic vertical cutting method (with Y-Axis)				
Parameters				
Feed speed		Pulse parameter	Cut-off disc rotational speed	
0,05 mm/s		Without pulse	2000 – 2500 RPM	
Notes				
- we recommend to use flange set ø 59 mm (Z1870050)				

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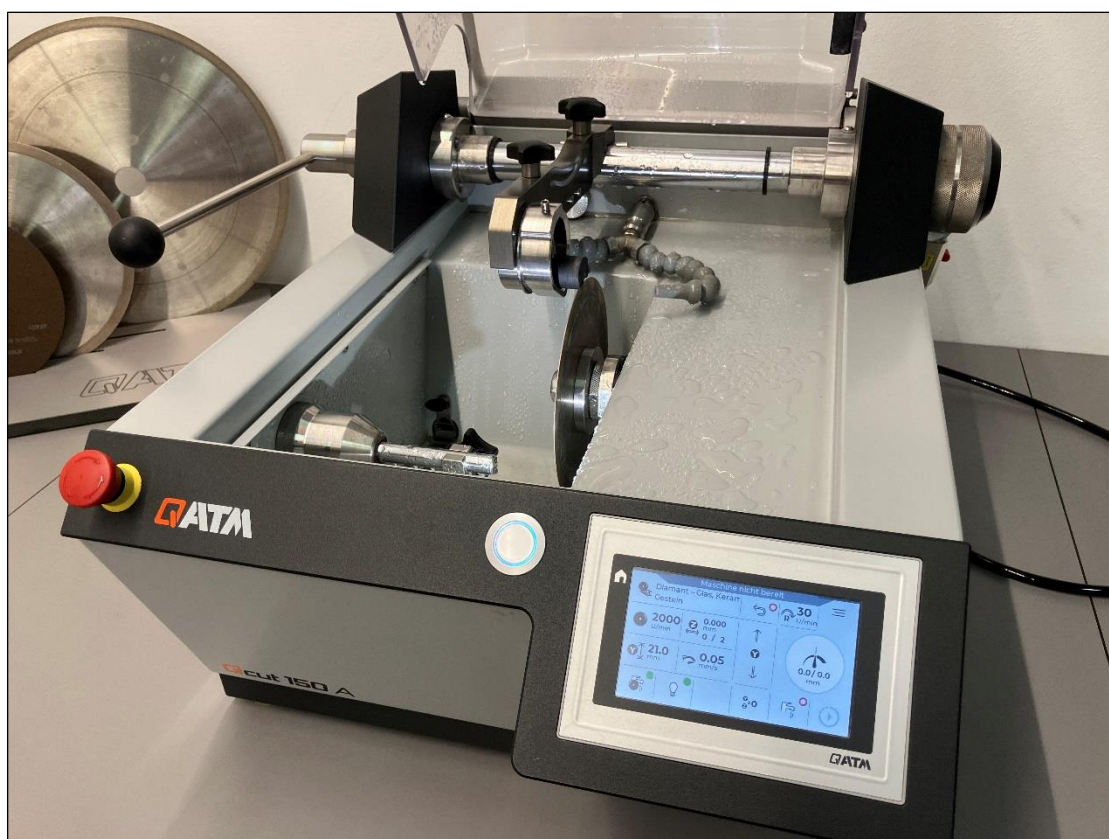


Figure 3: Overview of the cutting machine Qcut 150 A.



Figure 4: Overview of graphite cylinder with clamping tool clamping arm L + drop shape sample holder.

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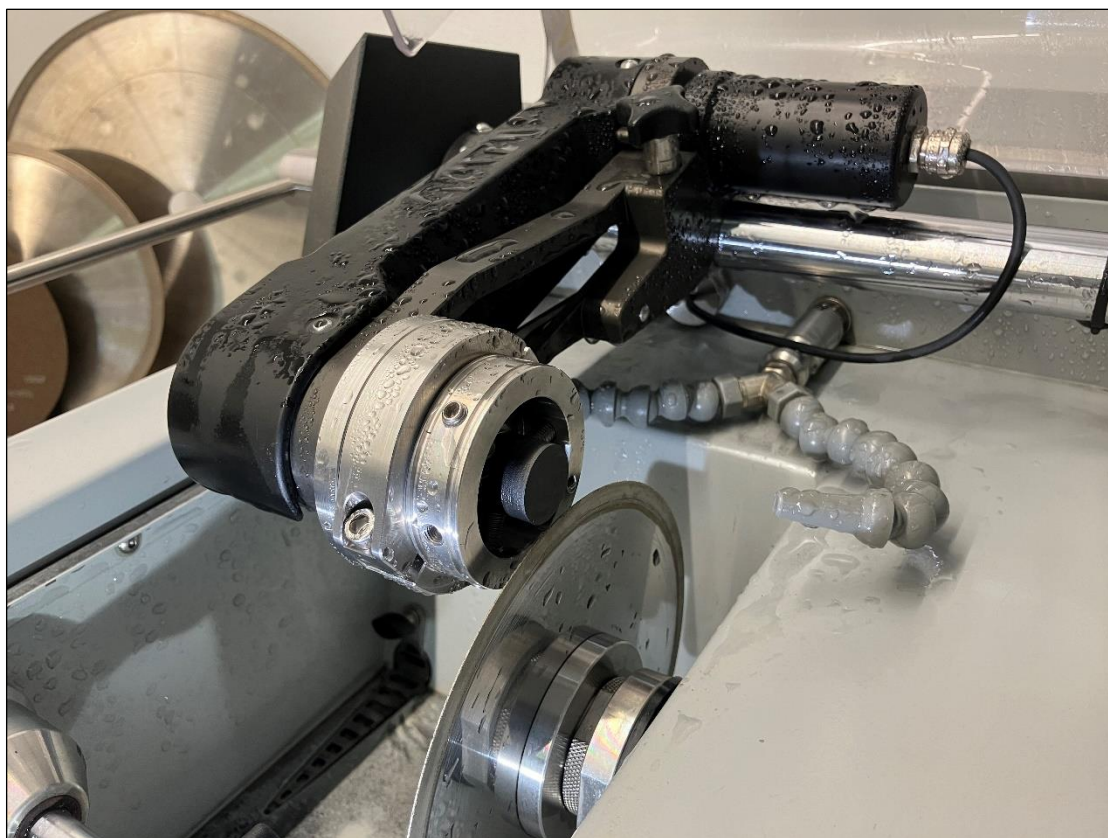


Figure 5: Overview of clamping tool rotation device RD1 – BEFORE cutting process.

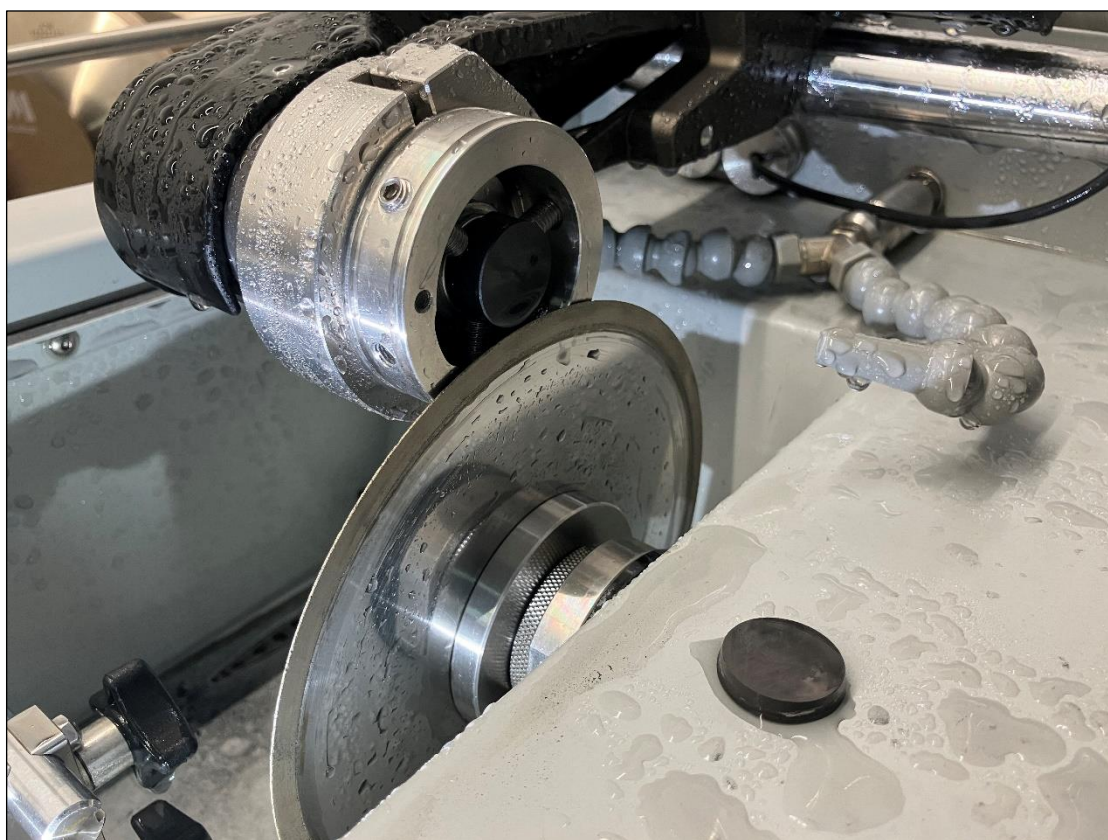


Figure 6: Overview of clamping tool rotation device RD1 – AFTER cutting process.

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Cutting – graphite plate with surface coating

 Cutting			
Device	Cut-off disc	Anti-corrosion coolant	Clamping tool
Qcut 150 A	Corundum cut-off disc 92002769	Coolant Standard 95014281	- Clamping arm L Z1870031 - Sample holder parallel clamping vice L Z1870043
Cutting method			
Automatic vertical cutting method (with Y-Axis)			
Parameters			
Feed speed	Pulse parameter	Cut-off disc rotational speed	
0,05 - 0,1 mm/s	Without pulse	2000 – 2500 RPM	
Notes			



Figure 7: Overview of recommended clamping tool for graphite plate with surface coating.

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UV mounting – only used for graphite plate with surface coating

 Mounting				
Device	Consumable	Curing time	Mold	Additional equip.
QMOUNT	Qprep UV 50 UV	1 Minute	Clear, ø 30 mm	
Notes				

Cold mounting

 Mounting				
Consumable	Mixing ratio Weight	Curing time	Mold	Additional equip.
Qpox 94	Resin : Hardener 20 g : 10 g	9 h	Grey, ø 40 mm	- Infiltration Unit - Scale - Mixing Stick - Dosing Cup - Plastic Clips
Notes				

Grinding/Polishing

Device	Samples holder	Pressure mode				
Qpol 250 A1 Eco	Z5445022	Single				
Step	MEDIUM		 RPM		 N	 min
 Grinding	SiC-Paper P1200	H ₂ O	200	100 ▶▶	15	0:30
 Pre-Polishing	GAMMA	Dia Complete Poly, 3 µm	150	100 ▶▶	20	2:00
 Polishing	ZETA	Dia Complete Poly, 1 µm	150	100 ▶▶	20	2:00
Notes						
- Pre-dosing for 3 µm und 1 µm: 3 s Dosing interval and dosing duration for Dia. Suspension 3 µm, 1 µm: Every 30 s for 1,3 s						

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Conclusion:

The cutting process for the received samples can be done with the cutting machine "Qcut 150 A" and the recommended clamping tool very well. The sample size fits to the size of the cutting machine.

The preparation steps marked in grey are only a recommendation.