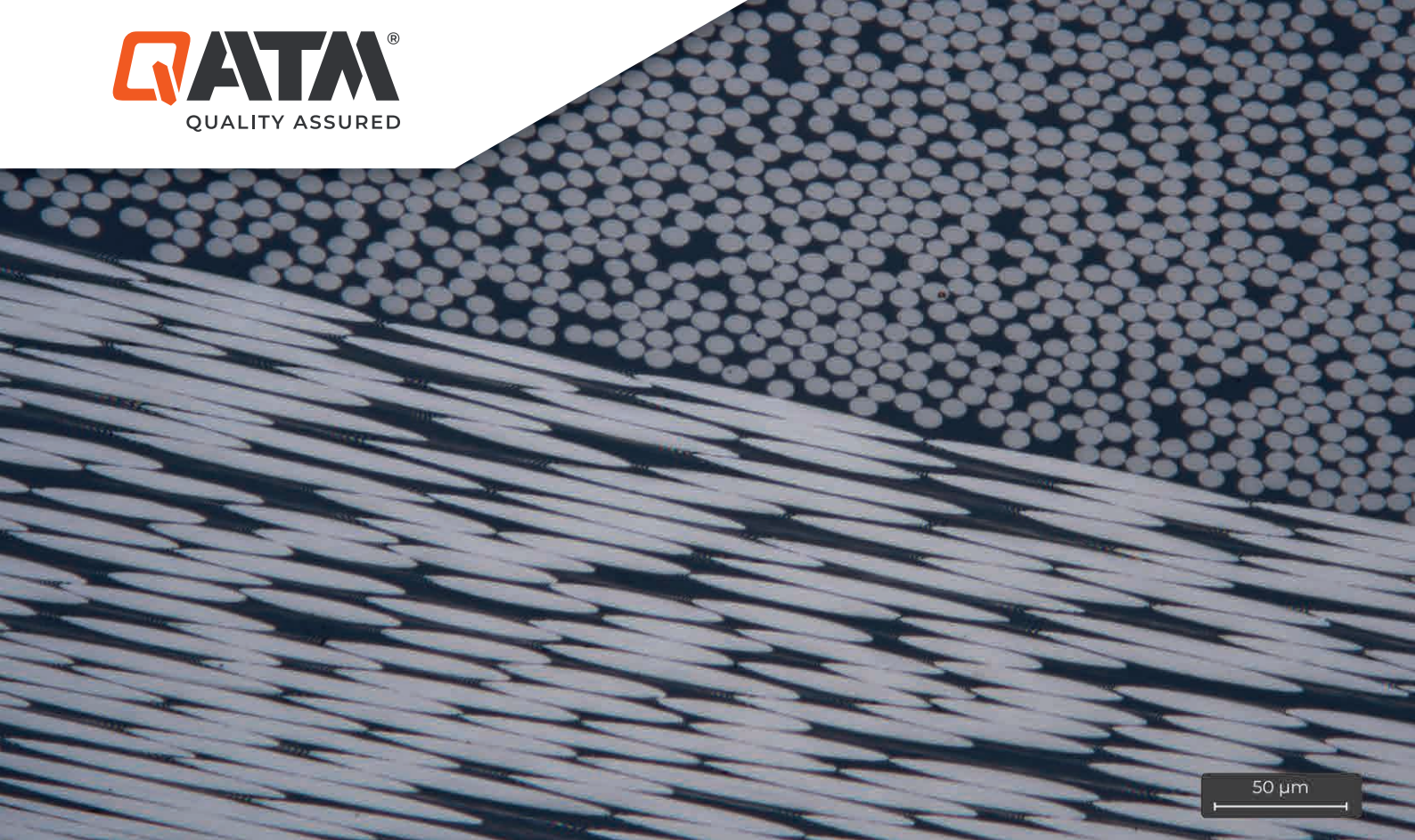




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CARBON-FIBER REINFORCED POLYMER

Objective:

The CFRP sample is to be examined for delamination, pores/voids and fiber displacement. The samples were cut (Qcut 350 A), mounted (Qpox 92) and ground/polished (Qpol 300 AI Eco+). Detailed parameters and images can be found in the following application laboratory report.

CUTTING



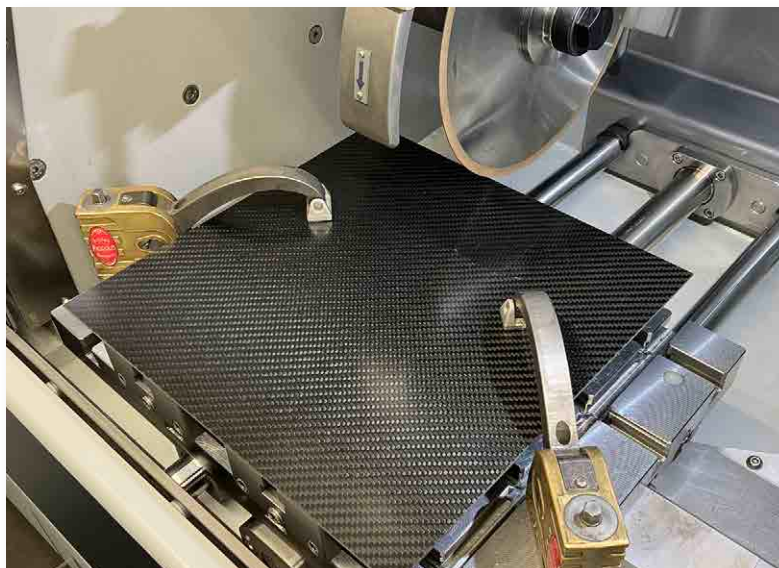
Cut-off machine Qcut 350 A

Device	Qcut 350 A	
Cut-off disc	Diamond cut-off disc	Item no.: 95002102
Coolant and anti-corrosion agent	ATM Cool Cut	Item no.: 95004145
Clamping tool	- 2x Easy-Multifunctional plate	Item no.: Z2236036
	- 2x Piccolo 132	Item no.: Z1350011
Cutting method	Step cut X (X + Y axis)	
Parameter	- Feed speed	0.3 mm/s
	- Pulse parameter	without pulse
	- Cut-off disc rotational speed	2500 rpm

Note

To avoid vibrations during parallel cutting, the CFRP sheet must be supported and clamped on both sides.

Qcut 350 A - Cutting the CFRP plate



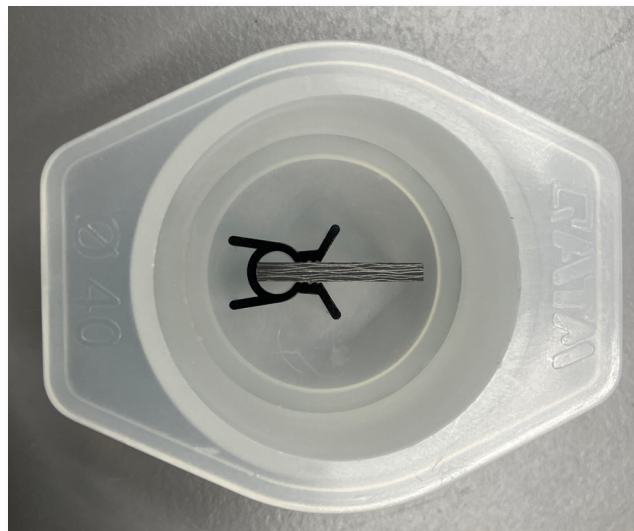
COLD MOUNTING



Cold mounting material Qpox 92

Mounting Material	Qpox 92
Mixing ratio	4 : 1 (Resin : Hardener), gravimetric
Curing time	12-13 h
Mounting mould	Qmould Clear, ø 40 mm
Accessories	- Mixing sticks - Mixing cup - Scale - Plastic clip
Notes	- It is important that the sample is held by a plastic clip and that the mounting material is slowly poured into the mold. Otherwise, there is a risk of the CFRP sample tipping over or being washed to the side.

CFRP sample after cutting on the bottom of the PP-mould.





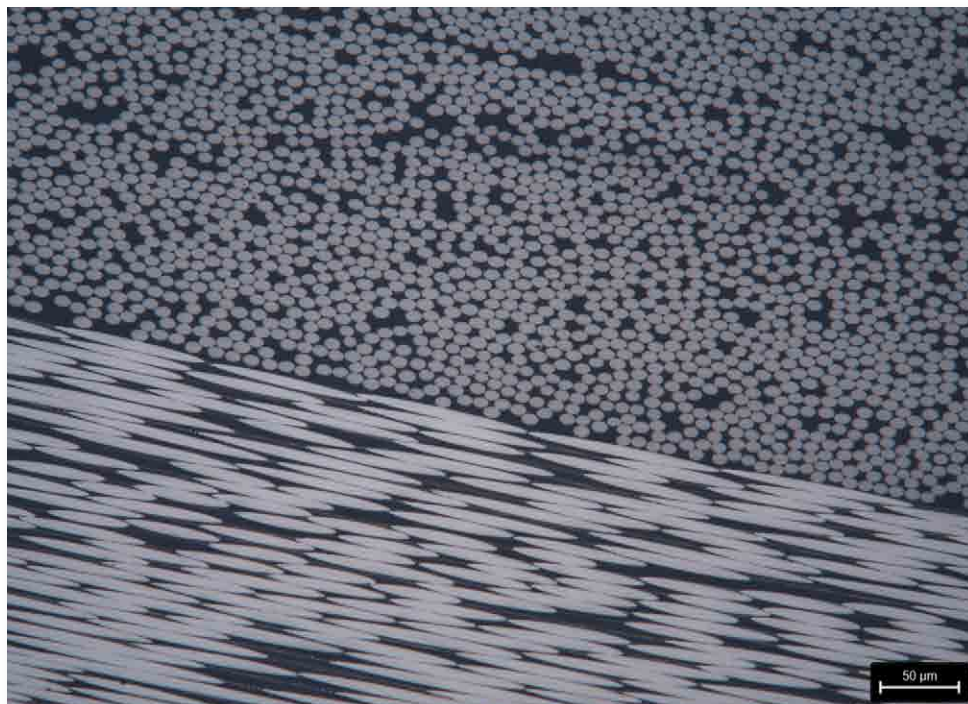
Automatic grinding and polishing machine Qpol 300 A1 Eco+

GRINDING/POLISHING

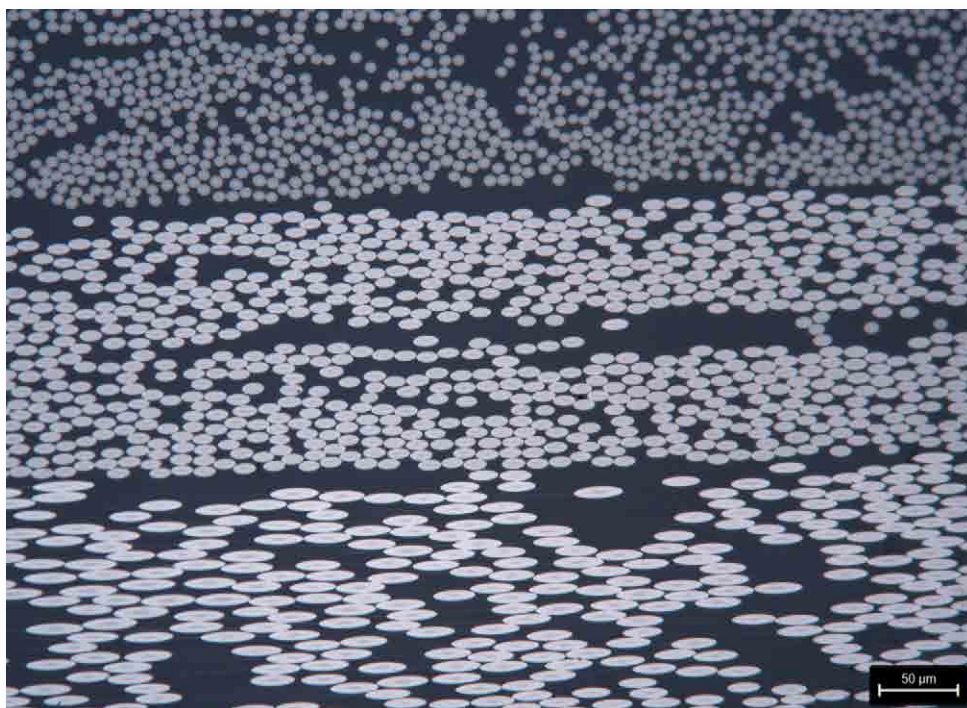
Device	Qpol 300 A1 Eco+	
Sample holder	6 x Ø 40 mm	Item no.: Z5446025
Pressure	Single pressure	

STEP	MEDIUM		 rpm	 rpm	 Single pressure N	 min
 Pre-Grinding	SiC-Paper P320 + Quick-Tap	H ₂ O	200	120 ▶▶ Synchronous Rotation	35	Until plane (approx. 1:00)
 Pre-Polishing	BETA	Dia-Complete Poly, 9 µm	200	120 ◀◀ Counter Rotation	30	5:00
 Polishing	GAMMA	Dia-Complete Poly, 3 µm	200	120 ▶▶ Synchronous Rotation	30	5:00
 Final polishing	OMEGA	Eposil F 0.1 µm	100	80 ◀◀ Counter Rotation	20	2:30 (H ₂ O during final 0:15)
Notes	- Pre-dosing for 9 µm und 3 µm and final polishing: 3 s - Dosing interval and dosing time for Dia. suspension 9 µm and 3 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 microstructure of CFRP sample under optical microscope - 200x



Microscope image after
final polishing – 200x



The Matrix and the carbon fibers in the
CFRP-microstructure – 200x

