

Carbon/glass fiber reinforced composites (CFC/GFC)

Recommended machines and additional consumables (not included)

CUTTING	Equipment ATM Brillant	Consumables Cut-off wheel: diamond, metal bond (bronze) Anti-corrosion coolant
MOUNTING	Equipment Pressure unit	Consumables Cold mounting: KEM 15 plus KEM 20
GRINDING/ POLISHING	Sample size Ø 40 mm	

Pressure parameters and specimen size

Specimen diameter [mm]	25	30	40	50	60
Divergence in pressure used in the preparation methods	-(5 N...10 N)	-5 N	0	+5 N	+(5 N...10 N)

Notes:

STEP	MEDIUM		rpm		Single Pressure N	min
Planar grinding	SiC-paper/foil P320 (280)	H ₂ O	250-300	▶▶ Synchronous Rotation	35	Until plane
Pre-polishing	BETA	Dia-Complete Poly, 9 µm	250-300	◀◀ Counter Rotation	30	5:00
Polishing	GAMMA	Dia-Complete Poly, 3 µm	250-300	▶▶ Synchronous Rotation	30	5:00
Final polishing	OMEGA	Eposal, 0.06 µm	120-150	◀◀ Counter Rotation	20	1:30 (H ₂ O during final 0:30)

BEGINNERS GUIDE

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|------------------|--|
| CUTTING | <ul style="list-style-type: none"> Use suitable cut-off wheels for composites (e.g. ATM diamond cut-off wheels) Constant cutting speed max. 0.25 mm/s |
| MOUNTING | <ul style="list-style-type: none"> Use mounting material with high edge retention Cold mounting |
| GRINDING | <ul style="list-style-type: none"> Grind with SiC-paper/foil P320 (280) Clean samples, holders and hands under running water after each grinding step |
| POLISHING | <ul style="list-style-type: none"> Rinse the polishing discs with water and spin dry after use Do not stack discs with different diamond sizes Clean samples, holders and hands under running water before each polishing step Use ethanol and blow dryer to avoid water stains Check after each step under the microscope if polishing marks are of equal size and randomly oriented Use the consumables only for CFC/GFC and not for other materials Rinse the OMEGA disc with water and spin dry after use Rinse the cap of the Eposal bottle after use, put cap back on Use cosmetic tissues to clean possible traces of Eposal after the last polishing step |

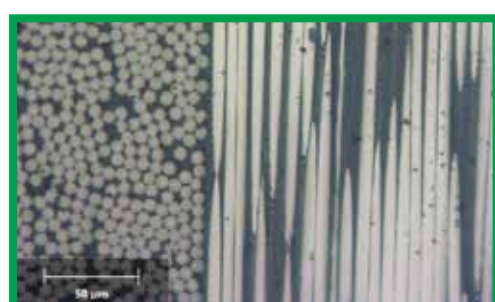
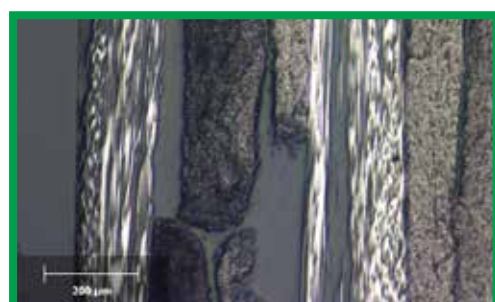
Notes:

SAMPLE MICROGRAPHS

OK Sample polished

10x micrograph of CFC after OMEGA polishing

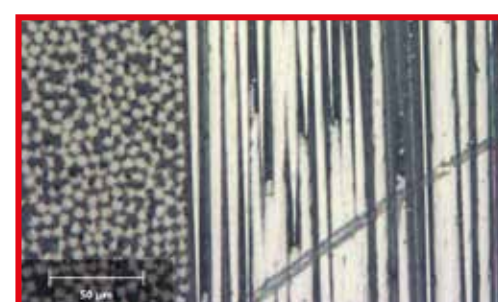
- No traces of scratches
- Clear structure/contour of the individual fibers - no smear
- Different orientations of the fibers can be observed



NOK Sample polished

10x micrograph of CFC after GAMMA polishing

- Scratches from contamination of cloth
 - Clean all polishing discs with clean brush under running water
 - Clean sample and sample holder
 - Check parameters (speed, pressure, etc.) and repeat polishing steps



Notes: