Preparation method

Carbon/glass fiber reinforced composites (CFC/GFC)

Recommended machines and additional consumables (not included)

<table>
<thead>
<tr>
<th>STEP</th>
<th>MEDIUM</th>
<th>Equipment</th>
<th>Consumables</th>
<th>Pressure parameters and specimen size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planar grinding</td>
<td>SC-paper/foil P320 (280)</td>
<td>ATM brillant</td>
<td>Cut-off wheel: diamond, metal bond (bronze)</td>
<td>Specimen diameter [mm] 25 30 40 50 60</td>
</tr>
<tr>
<td>Pre-polishing</td>
<td>BETA</td>
<td>Pressure unit</td>
<td>Cold mounting: KEM 15 plus KEM 20</td>
<td>Divergence in pressure used in the preparation methods (-5 N…10 N) -5 N +5 N +(5 N…10 N)</td>
</tr>
<tr>
<td>Polishing</td>
<td>GAMMA</td>
<td>Sample size Ø 40 mm</td>
<td>Anti-corrosion coolant</td>
<td>Single pressure [N] 35 30 30 20 1.30</td>
</tr>
<tr>
<td>Final polishing</td>
<td>OMEGA</td>
<td></td>
<td>DIam-Complete Poly, 9 µm</td>
<td>rpm 250-300 250-300 250-300 120-150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Synchronous Rotation</td>
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<td>Counter Rotation</td>
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<td>Single pressure [N] 35 30 30 20</td>
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<tr>
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<td>min</td>
</tr>
</tbody>
</table>

Notes:

BEGINNERS GUIDE

CUTTING
- Use suitable cut-off wheels for ferrous material (e.g. ATM diamond cut-off wheels)
- Cutting speed max. 0.25 mm/s

MOUNTING
- Use mounting material for almost gap-free mounting
- Cold mounting

GRINDING/POLISHING
- Grind with SC-paper/foil P320 (280)
- Clean samples, holders and hands under running water after each grinding step
- 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
- Use the consumables only for CFC/GFC and not for other materials
- Check after each step under the microscope if polishing marks are of equal size and randomly oriented
- 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
- Sparse scratches from 3 µm diamond after GAMMA
- Clean all polishing discs with clean brush under running water
- Clean sample and sample holder
- Check parameters (speed, pressure, etc.) and repeat OMEGA step

Notes:

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