Preparation method

Cobalt based alloy

Recommended machines and additional consumables (not included)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Consumables</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUTTING ATM Brilliant</td>
<td>Cut-off wheel: corundum, resin/rubber bond Anti-corrosion coolant</td>
</tr>
<tr>
<td>MOUNTING ATM Opal</td>
<td>Hot mounting: EPO black, EPO-Max Cold mounting: KEM 30 Hot or cold mounting</td>
</tr>
<tr>
<td>GRINDING/POLISHING</td>
<td></td>
</tr>
</tbody>
</table>

Sample size Ø 40 mm

Pressure parameters and specimen size

<table>
<thead>
<tr>
<th>Specimen diameter [mm]</th>
<th>25</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divergence in pressure used in the preparation methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(5 N...10 N)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-5 N</td>
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<td></td>
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<tr>
<td>+5 N</td>
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<td>+ (5 N...10 N)</td>
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</tbody>
</table>

Notes:

BEGINNERS GUIDE

CUTTING

- Use suitable cut-off wheels for cobalt based alloys (e.g. ATM FS-B or FS-A wheels)
- Cutting speed max. 0.25 mm/s

MOUNTING

- Use mounting material for almost gap-free mounting
- Cold and hot mounting both possible

GRINDING

- Start grinding with SiC-paper/foil P320 (280)
- Continue with P600 and P1200
- Thoroughly wash samples and holder under running water after each grinding step

POLISHING

- Do not stack discs with different diamond sizes
- Clean samples, holders and hands under running water before each polishing and grinding step
- Attention: keep cleaning time with water shortly as you can: corrosion-prone!
- Use ethanol and blow dryer to avoid water stains and corrosion
- Check after each step under the microscope if polishing marks are of equal size and randomly oriented
- Use the consumables only for cobalt and not for other materials
- Use cosmetic tissues to clean possible traces of Eposal after the last polishing step

Notes:

SAMPLE MICROGRAPHS

OK Sample polished

10x micrograph of cobalt based alloy after OMEGA polishing
- No traces of scratches
- Clear structure/contour of the different phases

NOK Sample polished

10x micrograph of cobalt based alloy after OMEGA polishing
- Outlines from inclusions 0.50 µm Eposal after OMEGA
- Clean all polishing discs with clean brush under running water
- Clean sample and sample holder
- Repeat OMEGA step

OK Sample etched

20x micrograph of cobalt based alloy etched with Kalling II (wiping for 3 sec)
- No traces of scratches
- Clear structure

Notes:

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