### Preparation method

#### Stainless steel (austenitic/ferritic)

**Recommended machines and additional consumables (not included)**

<table>
<thead>
<tr>
<th>STEP</th>
<th>MEDIUM</th>
<th>rpm</th>
<th>Pressure (N)</th>
<th>min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planar grinding</td>
<td>SiC-paper/foil P320 (280)</td>
<td>H₂O</td>
<td>250-300</td>
<td>30</td>
</tr>
<tr>
<td>Pre-polishing</td>
<td>BETA</td>
<td>Dia-Complete Poly, 9 µm</td>
<td>120-150</td>
<td>35</td>
</tr>
<tr>
<td>Polishing</td>
<td>GAMMA</td>
<td>Dia-Complete Poly, 3 µm</td>
<td>120-150</td>
<td>30</td>
</tr>
<tr>
<td>Final polishing</td>
<td>OMEGA</td>
<td>Eposal, 0.06 µm</td>
<td>120-150</td>
<td>20</td>
</tr>
<tr>
<td>Optional: Etching (chem.)</td>
<td>V2A reagent*</td>
<td></td>
<td></td>
<td>Approx. 0.05-0.30</td>
</tr>
</tbody>
</table>

- **Notes:**
  - ATM Item No. 92002605; if etching doesn’t work heat up (V2A) to 50 °C

#### BEGINNERS GUIDE

**CUTTING**
- Use suitable cut-off wheels for ferrous material (e.g. ATM FS-B, FS-C wheels)
- Cutting speed max. 0.25 mm/s

**MOUNTING**
- Use mounting material for almost gap-free mounting
- Hot or cold mounting possible

**GRINDING/POLISHING**
- Grind with SiC-grinding paper/foil P320 (280)
- Thoroughly wash samples and holder under running water after each grinding step
- Do not stack discs with different diamond sizes
- Clean samples, holders and hands under running water before each polishing step
- Check after each step under the microscope if polishing marks are of equal size and randomly oriented
- Use the consumables only for stainless steel (austenitic/ferritic) and not for other materials
- Use cosmetic tissues to clean possible traces of Eposal after the last polishing step

**SAMPLE MICROGRAPHS**

- **OK Sample polished**
  - 10x micrograph of stainless steel after OMEGA polishing
  - Minimal traces of scratches
  - Clean homogeneous surface
  - Pores and inclusions with clean edges

- **NOK Sample polished**
  - 10x micrograph of stainless steel after OMEGA polishing
  - Visible relief marks from 0.06 µm Eposal after OMEGA
  - Omega step wasn’t accomplished counter-clockwise
  - Repeat Gamma step and Omega with the correct settings

- 10x micrograph of stainless steel etched with V2A reagent (50 °C/3 min)
  - No traces of scratches
  - Clear structure

#### Pressure parameters and specimen size

<table>
<thead>
<tr>
<th>Specimen diameter [mm]</th>
<th>Specimen 25</th>
<th>Specimen 30</th>
<th>Specimen 40</th>
<th>Specimen 50</th>
<th>Specimen 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divergence in pressure used in the preparation methods</td>
<td>-5 N…10 N</td>
<td>-5 N</td>
<td>0</td>
<td>+5 N</td>
<td>+(5 N…10 N)</td>
</tr>
</tbody>
</table>

* ATM Item No. 92002605; if etching doesn’t work heat up (V2A) to 50 °C

**Notes:**

- **Cutting Equipment**
- **Mounting Equipment**
- **Grinding/Polishing Sample size Ø 40 mm**