

Stainless steel (austenitic/ferritic)

Recommended machines and additional consumables (not included)

CUTTING	Equipment ATM Brillant	Consumables Cut-off wheel: corundum, resin bond Anti-corrosion coolant
MOUNTING	Equipment ATM Opal	Consumables Hot mounting: EPO black, EPO-Max, Bakelite red/black Cold mounting: KEM 15 plus Hot or cold mounting
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	H ₂ O	rpm		Single Pressure N	min
Planar grinding	SiC-paper/foil P320 (280)	H ₂ O	250-300	▶▶ Synchronous Rotation	30	Until plane
Pre-polishing	BETA	Dia-Complete Poly, 9 µm	120-150	◀◀ Counter Rotation	35	5:00
Polishing	GAMMA	Dia-Complete Poly, 3 µm	120-150	▶▶ Synchronous Rotation	30	5:00
Final polishing	OMEGA	Eposal, 0.06 µm	120-150	▶▶ Synchronous Rotation	20	1:00 (H ₂ O during final 0:30)
Optional: Etching (chem.)	V2A reagent*					Approx. 0:05-0:30

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

BEGINNERS GUIDE

CUTTING	<ul style="list-style-type: none"> Use suitable cut-off wheels for ferrous material (e.g. ATM FS-B, FS-C wheels) Constant cutting speed max. 0.25 mm/s
MOUNTING	<ul style="list-style-type: none"> Use mounting material with high edge retention Hot or cold mounting possible
GRINDING	<ul style="list-style-type: none"> Grind with SiC-grinding paper/foil P320 (280) Thoroughly wash samples and holder under running water after each grinding step
POLISHING	<ul style="list-style-type: none"> 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 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 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

Notes:

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 (result from overpolishing)
 - » Repeat GAMMA and Omega step with shorter polishing durations
- Omega step wasn't accomplished counter-clockwise
 - » Repeat GAMMA and Omega step with correct settings



10x micrograph of stainless steel etched with V2A reagent (50°C/3 min)

- No traces of scratches
- Clear structure



Notes: