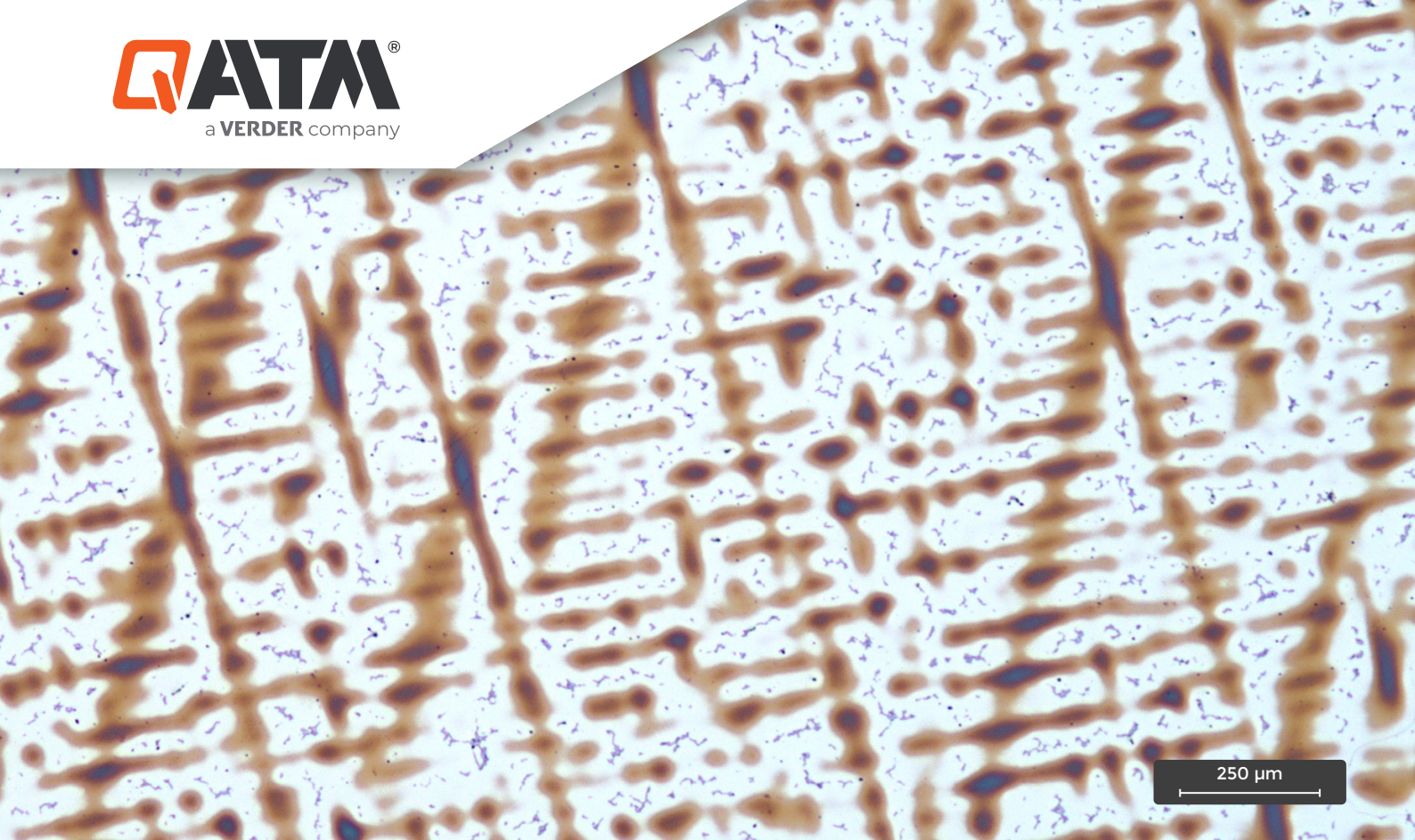




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MICROSTRUCTURE ANALYSIS OF A COBALT- CHROMIUM CAST ALLOY

Objective:

For the Cobalt-Chromium cast alloy, the microstructure in the edge and core areas was to be examined, as well as the pore content determined. The sample was cut (Qcut 250 A), cold-mounted (KEM 20), and prepared (Saphir 550). Detailed parameters and images can be found in the following application lab report.

CUTTING

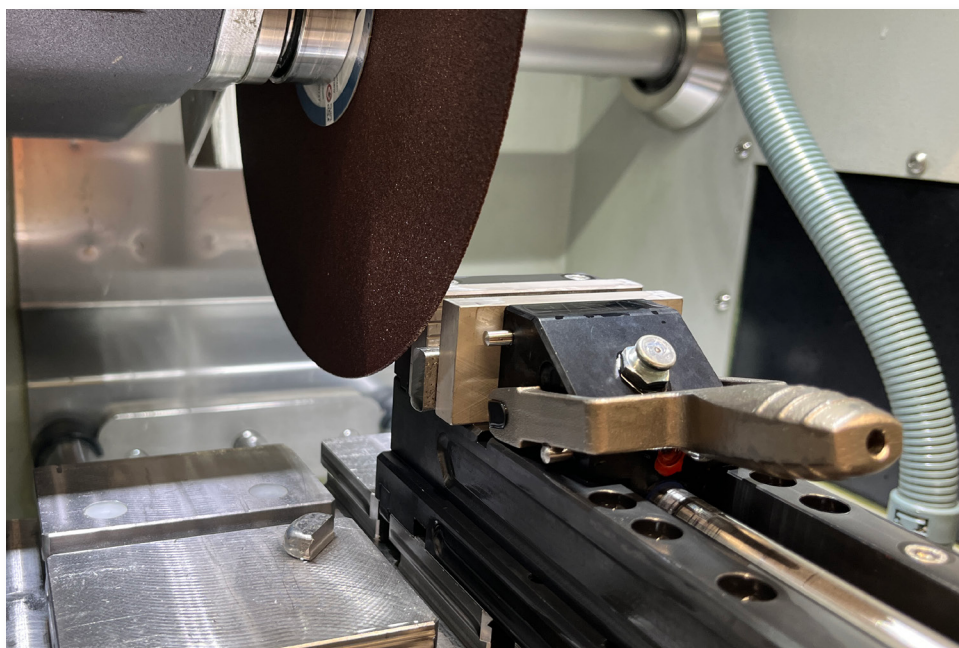
Device	Qcut 250 A	
Cut-off disc	FS-E-250A	Item no.: 95012525
Coolant and anti-corrosion agent	QATM Anti corrosion coolant standard	Item no.: 95014281
Clamping tool	- Qtool 80-100	Item no.: Z2231203
Cutting method	Horizontal cut (X-axis)	
Parameters	- Feed speed	0.5-0.6 mm/s
	- Pulse parameter	0.1 / 0.2 mm
	- Cut-off disc rotational speed	3015 rpm

Notes



Cut-off machine Qcut 250 A

Cutting the sample



COLD MOUNTING

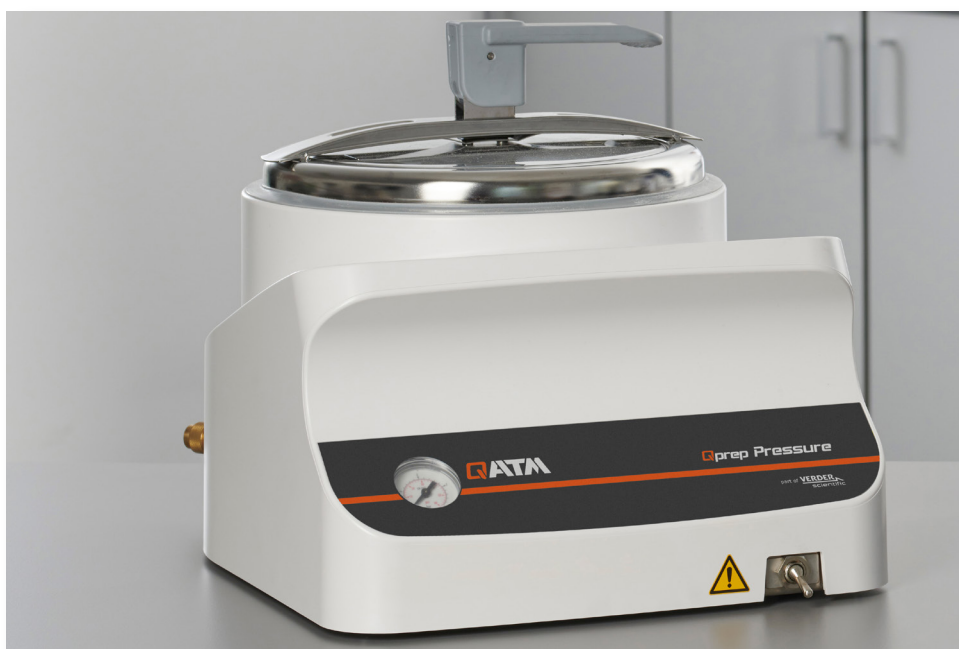
Mounting Material	KEM 20
Mixing ratio	2 : 1 (Powder : Liquid)
Curing time	15 min
Mounting mould	PP mould, Ø 40 mm
Accessories	- Mixing cups - Mixing sticks - Pressure Device
Notes	



Cold mounting material KEM 20

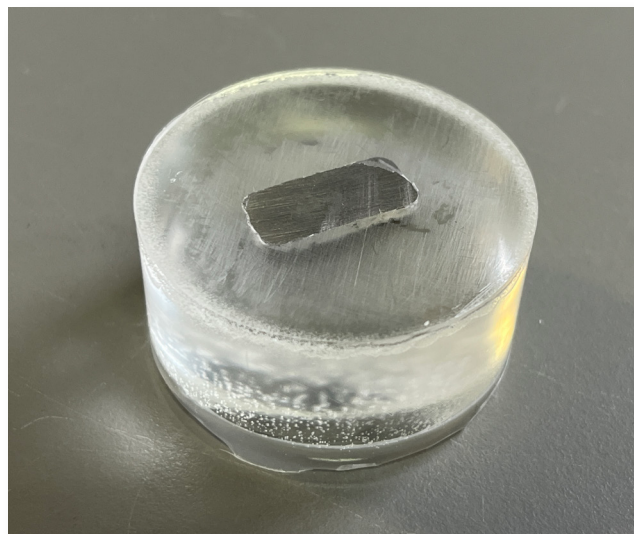
We recommend for mounting using the Pressure Device Qprep Pressure

Qprep Pressure for bubble free hardening of methyl methacrylates





Sample in the cold mounting mould



Mounting sample bubble free



Automatic grinding and polishing machine SAPHIR 550

GRINDING/POLISHING

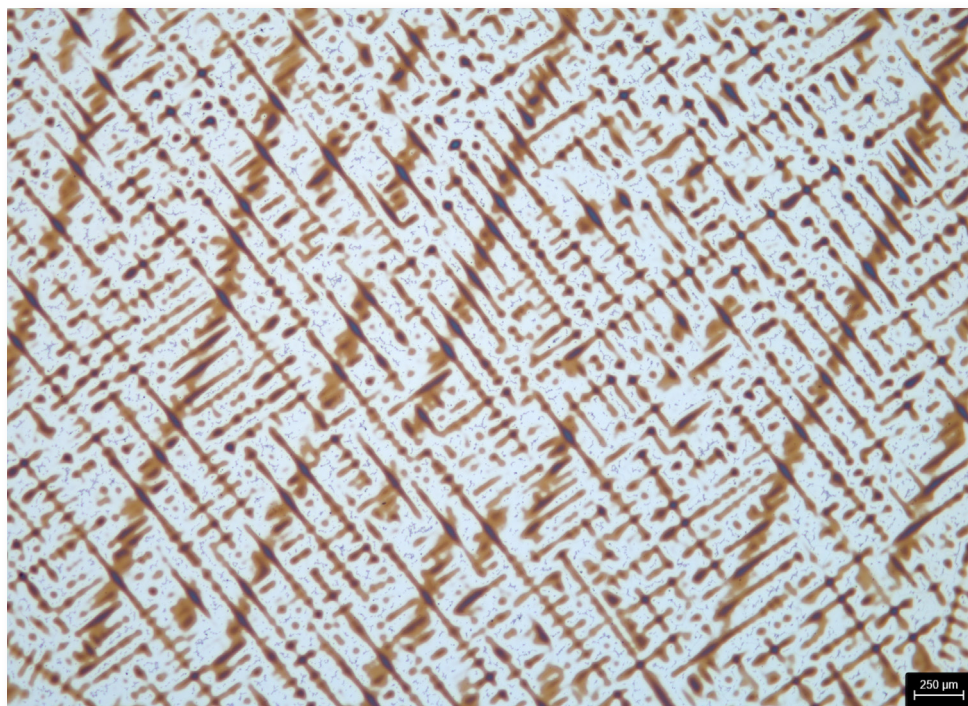
Device	SAPHIR 550	
Sample holder	6 x Ø 40 mm	Item no.: Z5400203
Pressure	Single pressure	

STEP	MEDIUM		 rpm	 rpm	 Single pressure N	 min
 Pre grinding	VEGA, 54 µm	H ₂ O	200	100 ◄► Counter Rotation	30	2:00 (till flat)
 Pre polishing	CONTERO H	Diamond suspension Poly, 9 µm	150	100 ►► Synchronous Rotation	35	7:00
 Polishing	GAMMA	Diamond suspension Poly, 3 µm	150	100 ►► Synchronous Rotation	35	7:00
 Polishing	SIGMA	Diamond suspension Poly, 1 µm	150	100 ►► Synchronous Rotation	30	3:00
 Final polishing	OMEGA	EPOSIL F 0.1 µm	100	80 ◄► Counter Rotation	20	2:00 (Rinsing time: 10 s)
 Etching (chem.)	Beraha 3					3:00 - 4:00
Notes	- Pre-dosing for final polishing suspension: 3 s - Dosing interval and dosing time for diamond suspension 9 µm, 3 µm and 1 µm: each 30 s for 1.3 s - Pre-dosing for 9 µm, 3 µm and 1 µm: 3 s - Dosing interval and dosing time for final polishing suspension: each 20 s for 1.0 s					

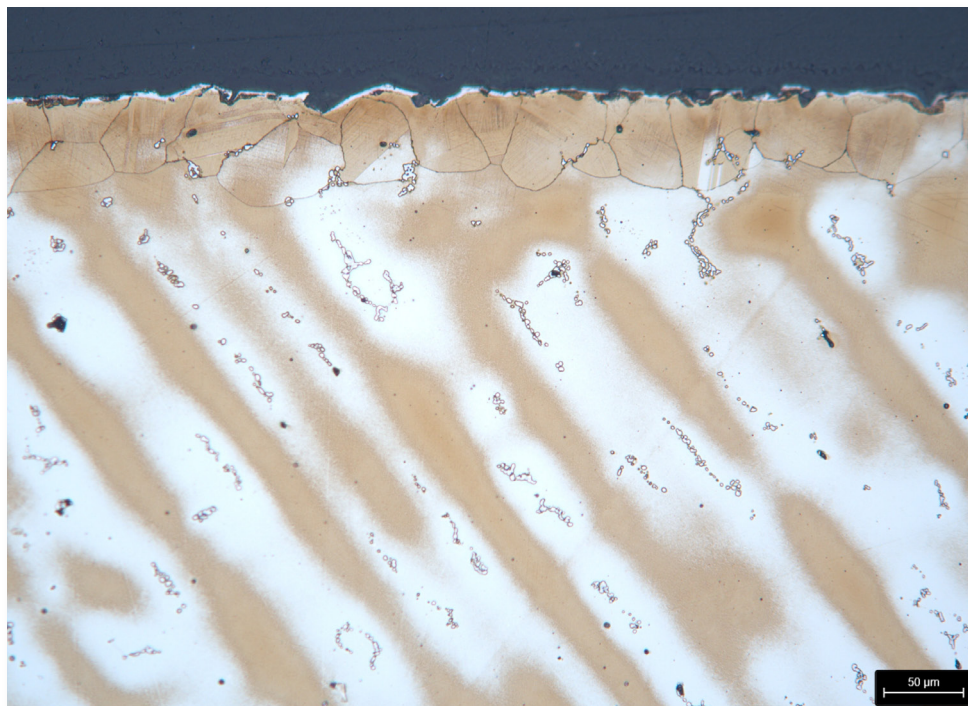
The CoCrMo cast alloy structure under the
light microscope - 100 : 1 (unetched)



The CoCrMo cast alloy structure under the
light microscope - 25 : 1 (etched)



The CoCrMo cast alloy structure on the edge area under the light microscope - 200 : 1 (etched)



Conclusion

In order to achieve an optimal cutting result, we recommend choosing a suitable cutting wheel. To separate this sample, an FS-E type cutting wheel was selected. Depending on the size and thickness of the sample, the pulse setting is very helpful. In this case, the sample is cut particularly gently.

For cold mounting, the Qprep Pressure device is best suited to ensure bubble-free curing of the mounting material.

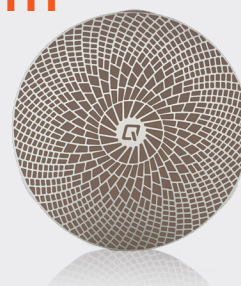
The selection of grinding media is particularly important when it comes to particularly flat or sharp-edged grinding.

The final polishing achieves an optimal polishing result. The fine scratches are removed so that the microstructure is clearly visible after etching and the examination can be carried out properly.

OUR PRODUCT OF THE MONTH

Fine grinding disc CONTERO H

Item no.: 95017605 (Ø 250 mm),
95017606 (Ø 300 mm)



Find out more at
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