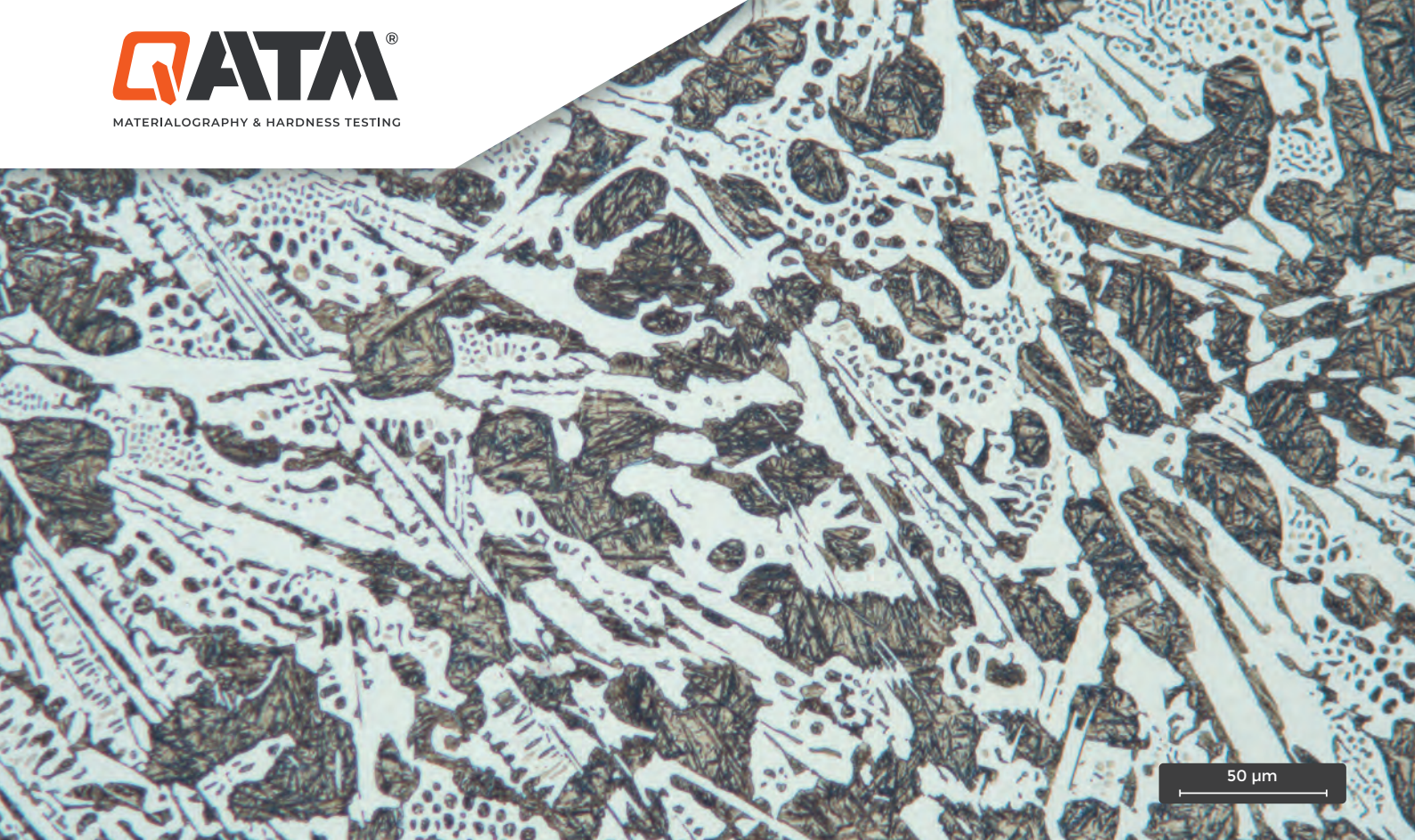




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CAST STEEL MATERIAL WITH MARTEBITIC AND LEDEBURITIC STRUCTURE

Objective:

The cast steel material should be prepared to determine and visualize the microstructure. Due to the material alloy - a dendritic microstructure is to be expected. The preparation should include the following steps: Cutting, mounting (hot mounting), grinding, polishing and etching.

CUTTING

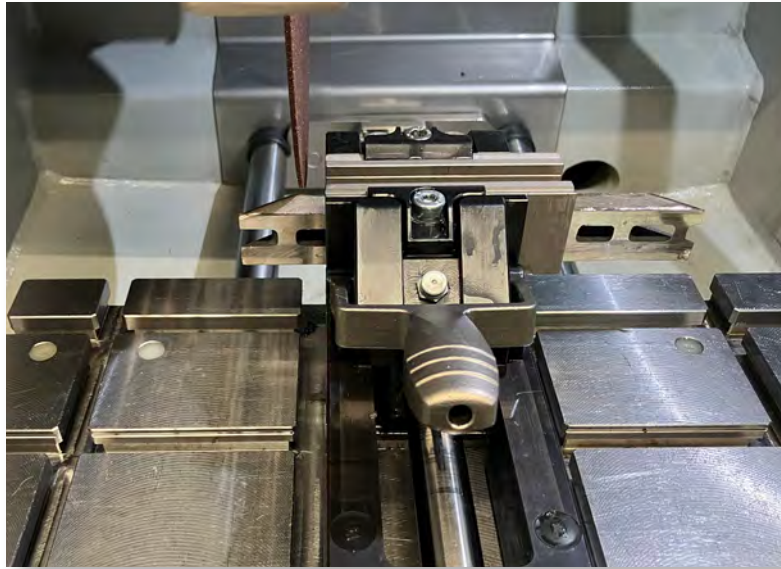


Cut-off machine Qcut 350 A

Device	Qcut 350 A	
Cut-off disc	FS-E-300A	Item no.: 95012532
Coolant and anti-corrosion agent	ATM Cool Cut	Item no.: 95004146
Clamping tool	- Qtool 80 Vario	
Cutting method	Automatic vertical cutting method (Y-axis)	
Parameter	- Feeding speed	0.1 mm/s
	- Pulse setting	Without pulse
	- Rotational speed of cut-off disc	2800 rpm

Note

The cutting process



HOT MOUNTING

Device	Qpress 50	
Mounting material	EPO BLACK	Item no.: 95011990
Heating time	6:00 min	
Temperature	200 °C	
Pressure	250 bar	
Cooling time	4:00 min	
Accessories	BAKELIT	
Heat set up	100%	
Pressure mode	Pressure from beginning	
Cooling set up	100%	
Note		

- the parameter recommendation is for mold diameter 40 mm



Hot mounting material EPO BLACK



Hot mounting press Qpress 50



The mounted sample



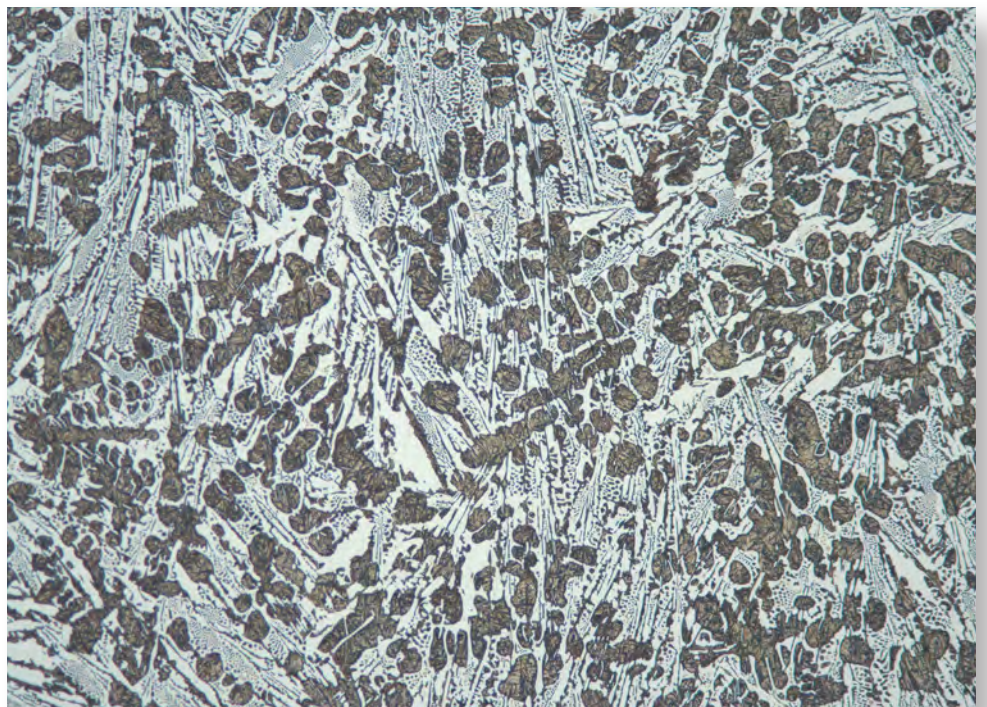
Automatic grinding and polishing machine Qpol 300 A1 Eco+

GRINDING/POLISHING

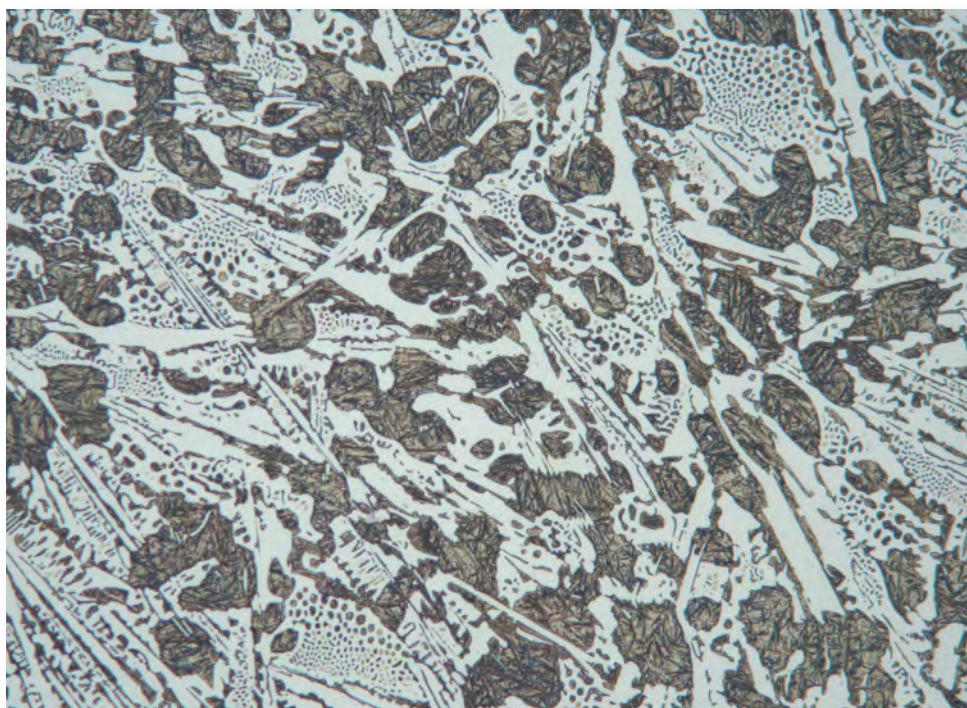
Device	Qpol 300 A1 Eco+	
Sample holder	6 x 40 mm	Item no.: Z5446025
Pressure	Single pressure	

STEP	MEDIUM		 rpm	 rpm	 Single Pressure N	 min
 Pre-Grinding	GALAXY Green	H ₂ O	200	120 ◄► Counter Rotation	35	Until flat surface (ca. 2:00)
 Polishing	BETA	Dia-Complete Poly, 9 µm	150	120 ►► Synchronous Rotation	30	5:00
 Polishing	GAMMA	Dia-Complete Poly, 3 µm	150	120 ►► Synchronous Rotation	30	5:00
 Polishing	ZETA	Dia-Complete Poly, 1 µm	150	120 ►► Synchronous Rotation	30	2:00
 Etching (chem.)	3% alc. based Nitric acid	-	-	-	-	0:05
Notes	- Pre-dosing for diamond suspension 9 µm, 3 µm und 1 µm = 3 s - Dosing interval and dosing duration for Dia Complete 9 µm, 3 µm and 1 µm: Every 35 s for 2 s					

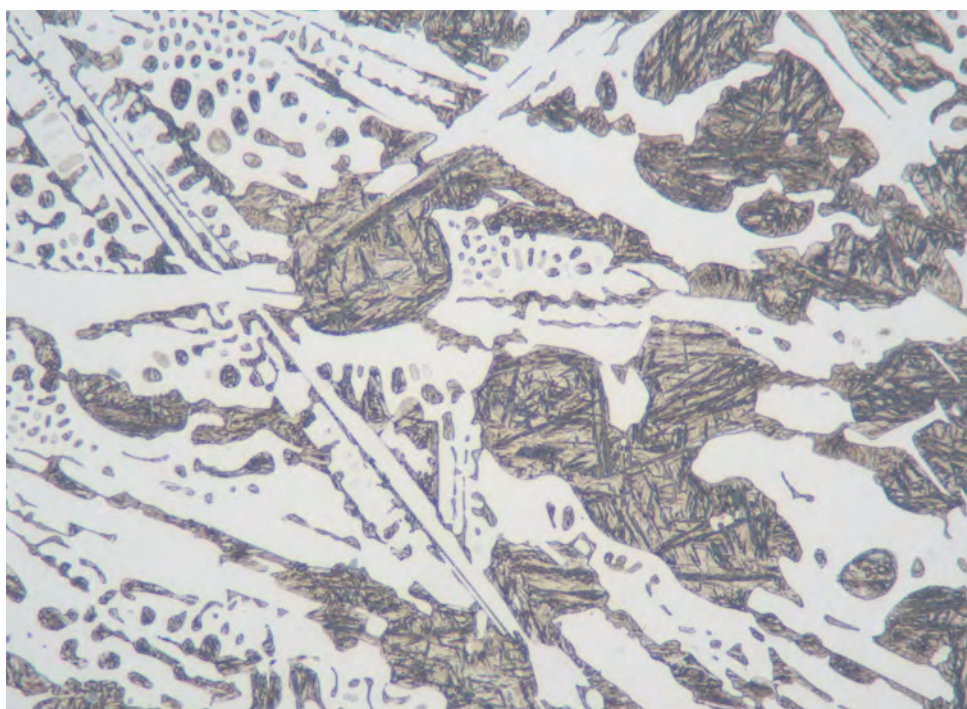
Dendritic microstructure consisting of martensite (brown) and ledeburite (white)
- 100 x



As in the previous illustration only with
higher magnification – 200 x



The microstructure with martensite and
ledeburite phases – 500 x



Find out more at
www.qatm.com