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METALLOGRAPHIC PREPARATION OF A Al-Si CAST ALLOY

Objective:

The sample is to be examined for pores/voids and the microstructure. The samples were separated (Qcut 350 A), heat-embedded (Qpress 40) and prepared (Qpol 250 M1 + Qpol Go). Detailed parameters and images can be found in the following application laboratory report.

CUTTING

Device	Qcut 350 A	
Cut-off disc	Silicon carbide cut-off wheel, resin bonded, NF-A300SC	
Coolant and anti-corrosion agent	QATM-CoolCut	
Clamping tool	2x Universal vices Piccolo 100 1x Easy multifunctional plate	
Cutting method	Horizontal cut (X-axis)	
Parameter	- Feeding speed	0.8 mm/s
	- Pulse setting	0.2 / 0.2 mm
	- Rotational speed of cut-off wheel	2700 rpm

Notes



Cut-off machine
Qcut 350 A

Cutting the sample



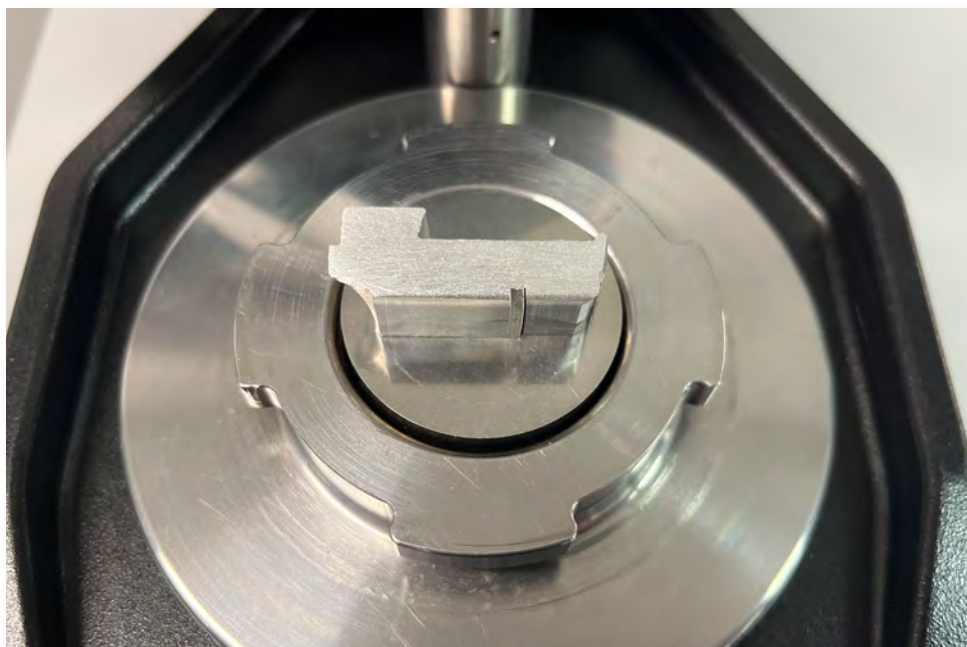
HOT MOUNTING



Hot mounting press Qpress 40

Device	Qpress 40
Mounting material	Bakelit Black
Heating time	3:15 min
Temperature	180 °C
Pressure	250 bar
Cooling time	3:00 min
Accessories	-
Heat set up	100%
Pressure mode	Pressure from Start
Cooling set up	100%
Mould assembly	Ø 40 mm
Notes	

Sample before mounting





Grinding and polishing machine Qpol 250 M1 + grinding and polishing head Qpol Go

GRINDING/POLISHING

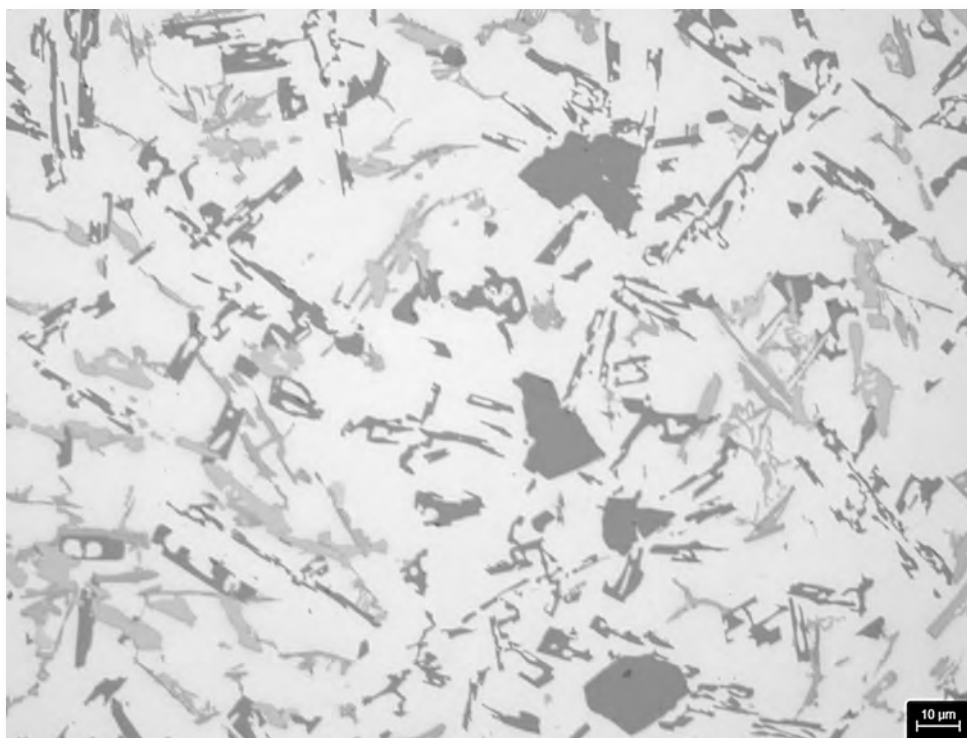
Device	Qpol 250 M1 + Qpol Go
Sample holder	4 x Ø 40 mm
Pressure	Single pressure

STEP	MEDIUM		 rpm	 rpm	 Single pressure N	 min
 Planar grinding	SiC-Paper P320 +Quick-Tap	H ₂ O	250	150 ►► Synchronous Rotation	25	Till flat (approx. 1:00)
 Grinding	SiC-Paper P600 +Quick-Tap	H ₂ O	250	150 ►► Synchronous Rotation	25	1:00
 Grinding	SiC-Paper P1200 +Quick-Tap	H ₂ O	250	150 ►► Synchronous Rotation	25	1:00
 Polishing	SIGMA	Dia-COMplete Poly, 3 µm	150	150 ►► Synchronous Rotation	30	5:00
 Final polishing	OMEGA	EPOSIL F 0.1 µm	100	150 ◄◄ Counter Rotation	25	2:30 (H ₂ O rinsing time: 15 s)
Notes	- Pre-dosing for 3 µm: 3 s - Dosing interval and dosing duration for Dia-COMplete suspension 3 µm: Every 30 s for 1,3 s The microscope images were taken with a Leica DM8000.					

The Al-Si casting alloy under the light microscope - 200:1



The Al-Si casting alloy under the
light microscope - 500:1



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