

Application lab. report

Stainless-steel components



QATM-Preparation method

Objective:

Five specimens have been received. All specimens are to be cut with the Qcut 200 A, mounted with the Opal 410 and prepared with the Qpol 250 M1 + Qpol GO head. The microstructure of the components will be investigated. Detailed parameters and images will follow in the report.



Figure 1. As-received samples

QATM-Preparation method

Cutting

		Cutting	
Device	Cut-off disc	Anti-corrosion coolant	Clamping tool
Qcut 200 A	92004998	QATM Cool Cut	- Qtool 60 (Z2235200)
Cutting method			
Horizontal cut (X-axis)			
Parameters			
Feed speed	Pulse parameter	Cut-off disc rotational speed	
0,1 mm/s	Without Pulse	3000 RPM	
Notes			

Hot mounting

		Mounting			
Device	Consumable	Heating time	Temperature	Pressure	Cooling time
Opal 410	Duroplast black	5:00	190°C	6 (180bar)	4:00
Filler or additional consumables	Heating power	Pressure mode	Cooling power		
-	-	-	-		
Notes					

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Figure 2. The mounted sample.

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Grinding/Polishing

Device	Samples holder	Pressure mode					
Qpol 250 M1 Qpol Go Qdoser ONE	4x ø40 mm Z5450008	Single					
Step	MEDIUM		 RPM	 N	 min		
 Planar grinding	SiC-Paper P240 Self-adhesive + X-Tap	H ₂ O	250	150 ◀ ▶	30	Till flat Approx. 1:30	
 Grinding	SiC-Paper P800 Self-adhesive + X-Tap	H ₂ O	250	150 ◀ ▶	30	0:45	
 Grinding	SiC-Paper P1200 Self-adhesive + X-Tap	H ₂ O	250	150 ◀ ▶	30	0:45	
 Pre-Polishing	SIGMA	Dia Complete Poly, 3µm	120	150 ▶ ▶	25	4:30	
 Polishing	ZETA	Dia Complete Poly, 1µm	120	150 ▶ ▶	20	1:30	
 Etching Sample 1-4	Etchant Nital 3%					0:07	
Etching Sample 5	Etchant V2A					0:05	

Notes

- Pre-dosing for 9 µm, 3 µm und 1 µm: 3 s
Dosing interval and dosing duration for Dia. Suspension 9 µm, 3µm, 1µm:
Every 30 s for 1,3 s
- Dosing interval and dosing duration for lubricant:
Every 60 s for 1,3 s

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Figure 3: Sample 1 microstructure edge

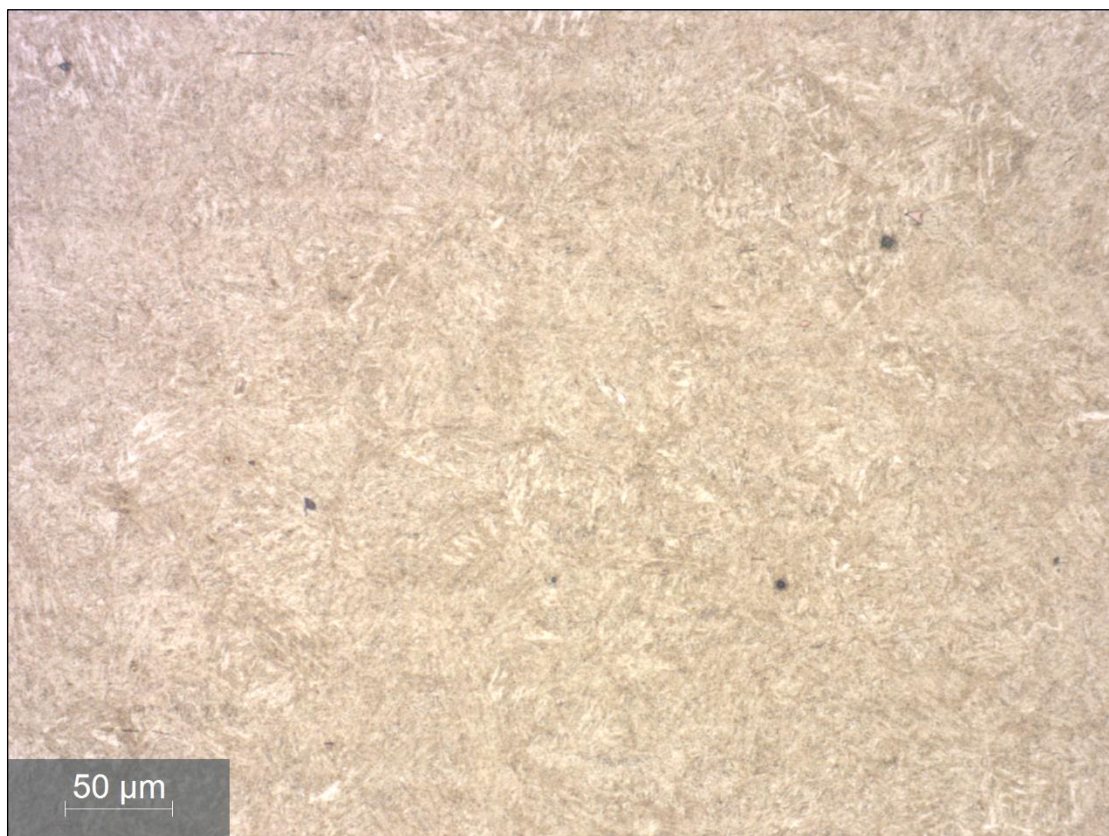


Figure 4: Sample 1 microstructure core

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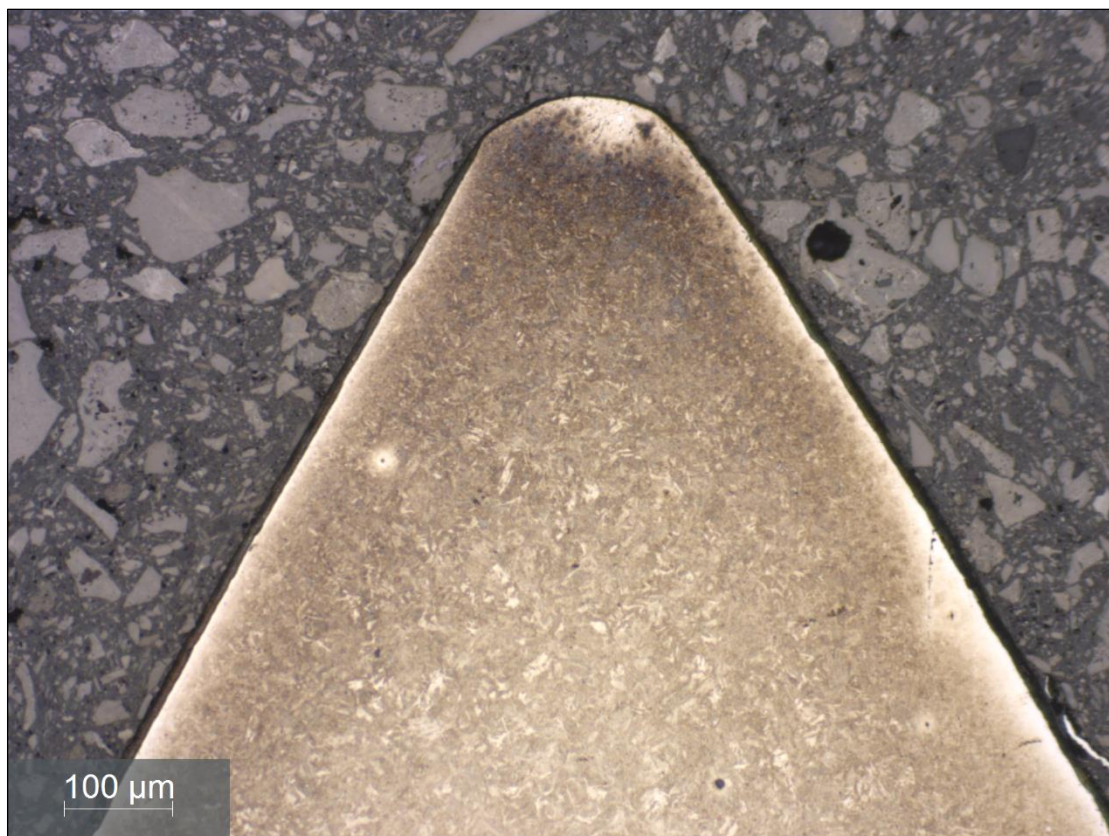


Figure 5: Sample 2 microstructure edge

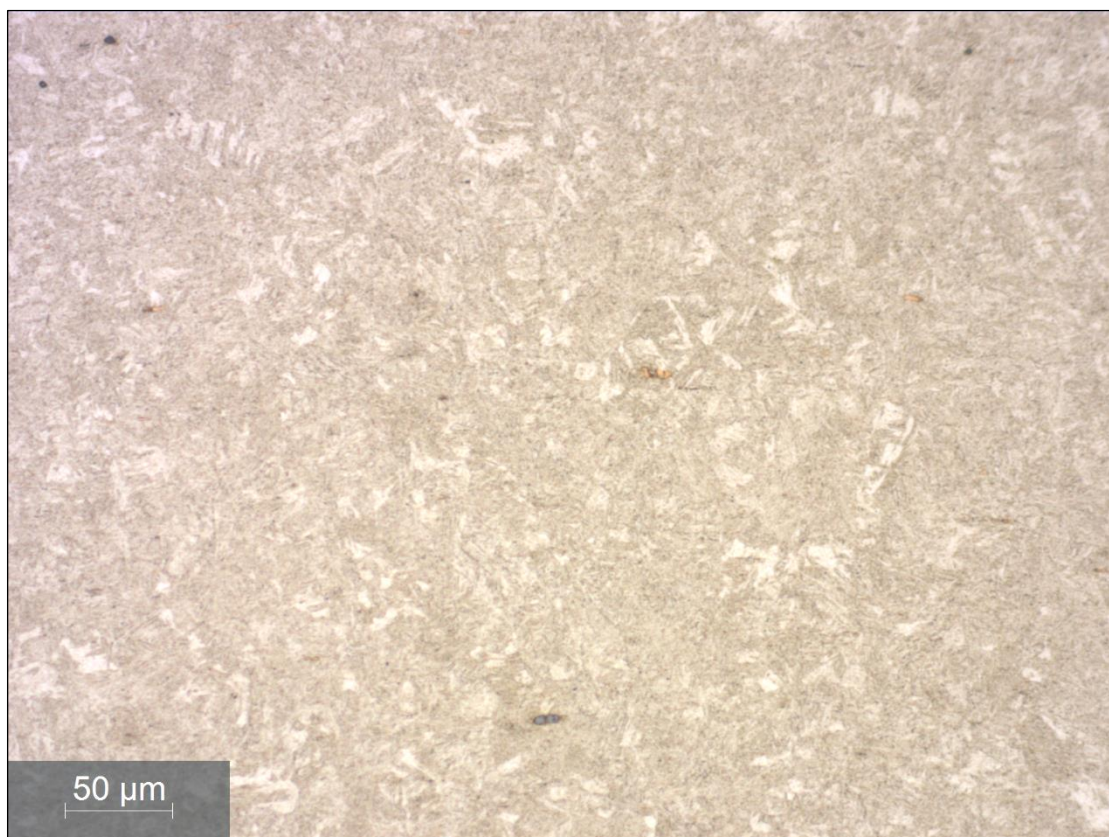


Figure 6: Ove Sample 2 microstructure edge

QATM-Preparation method

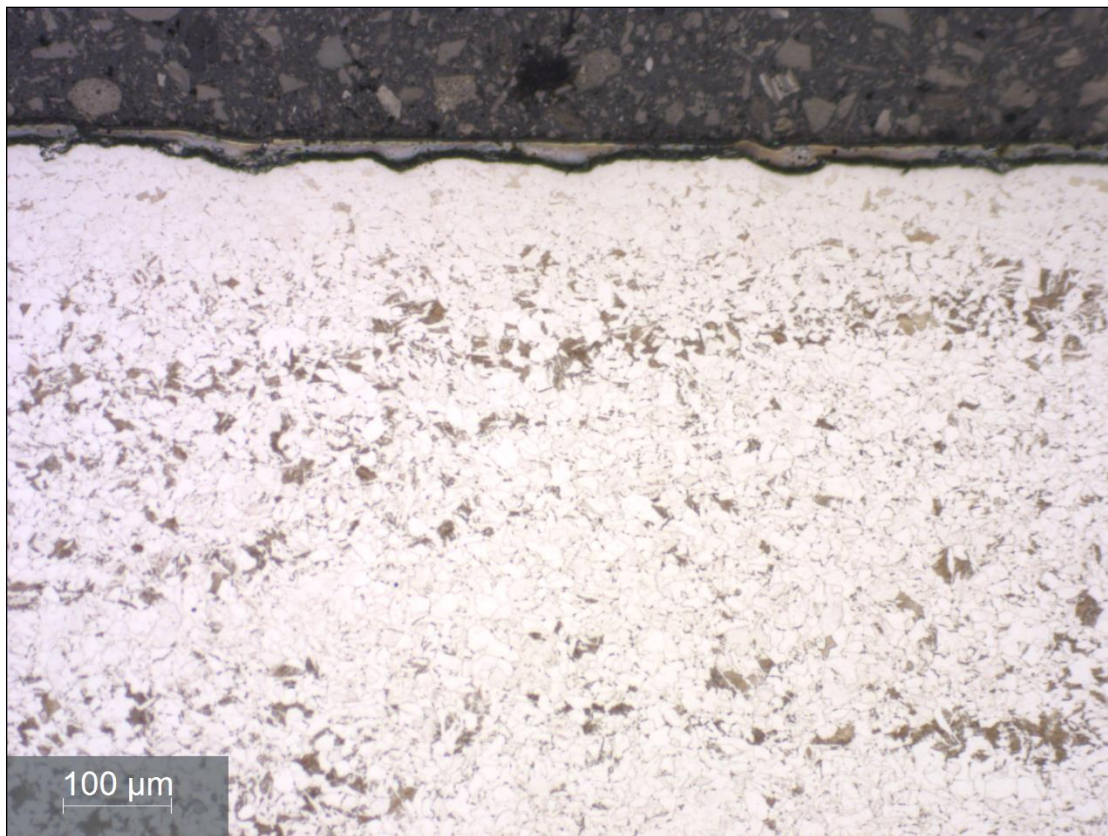


Figure 7: Sample 3 microstructure edge

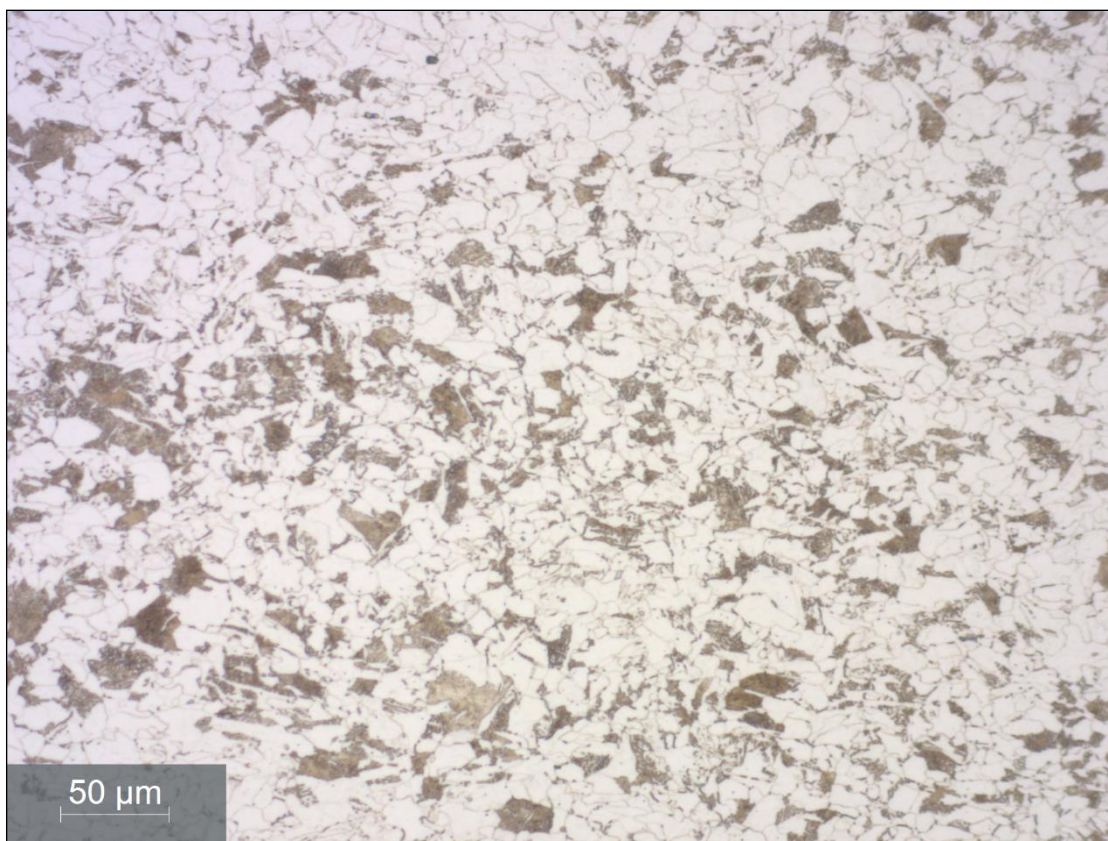


Figure 8: Sample 3 microstructure edge

QATM-Preparation method

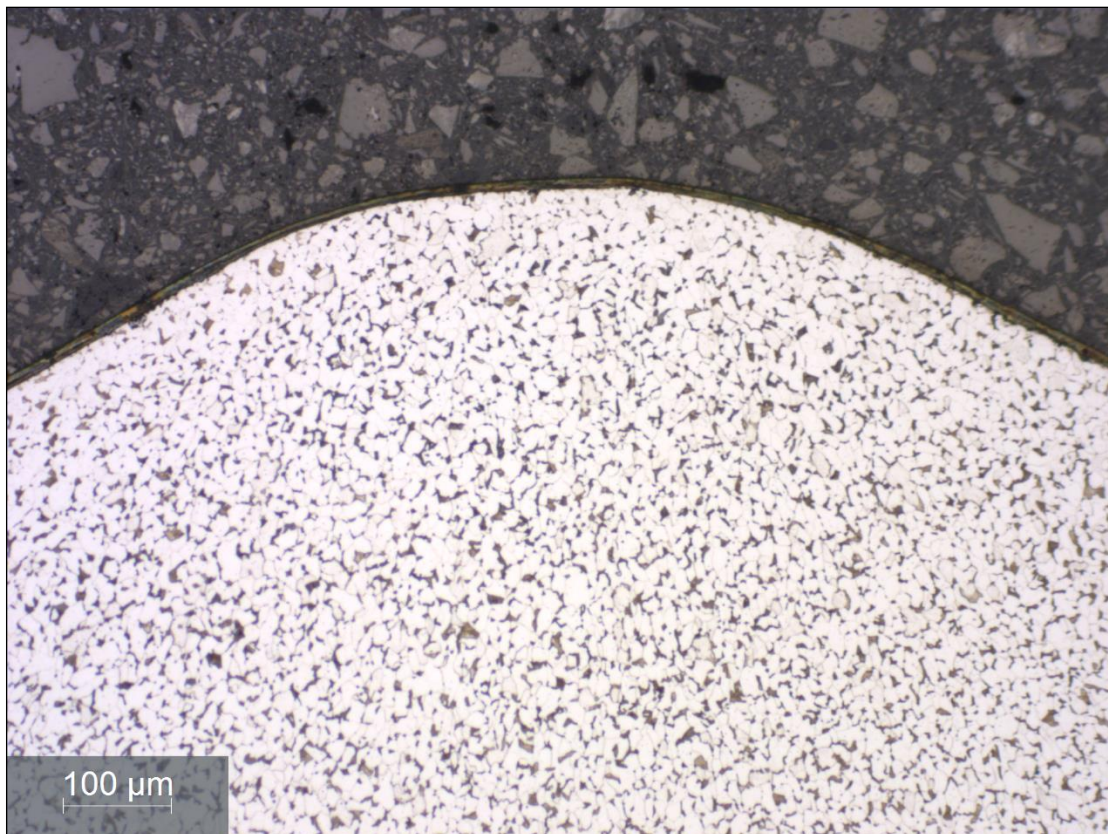


Figure 9: Sample 4 microstructure edge

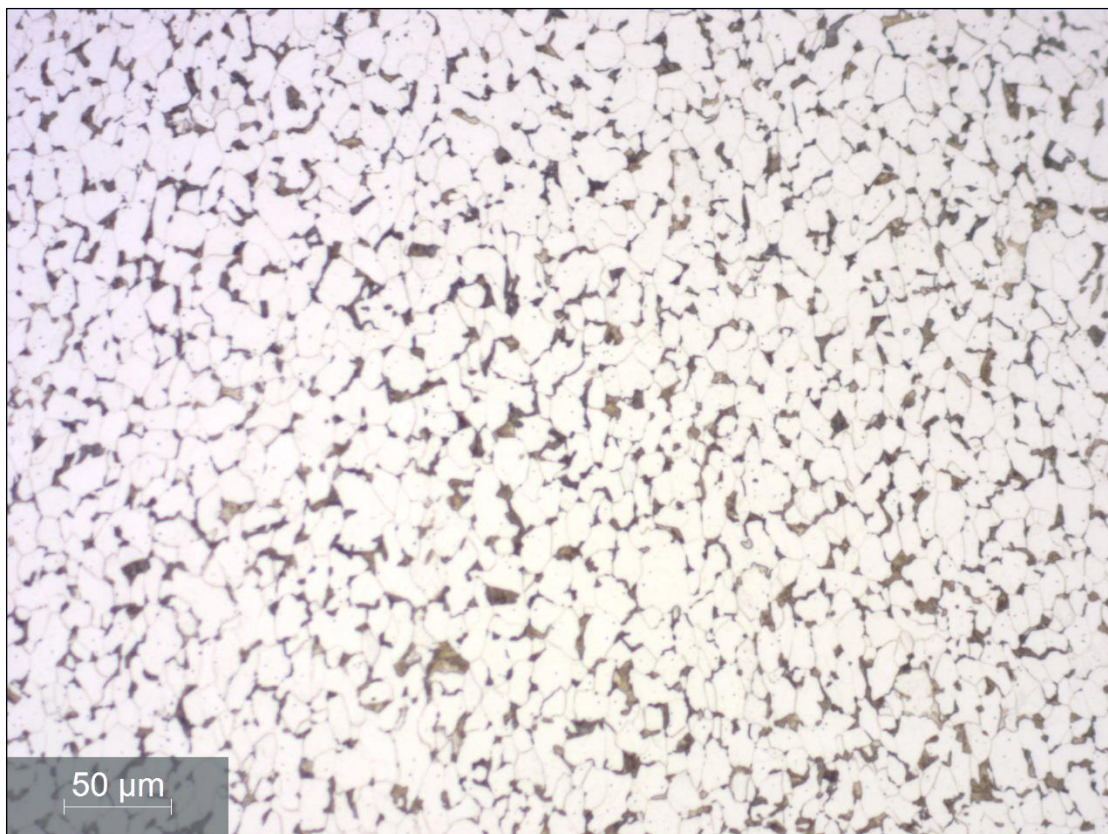


Figure 10: Sample 4 microstructure edge

QATM-Preparation method

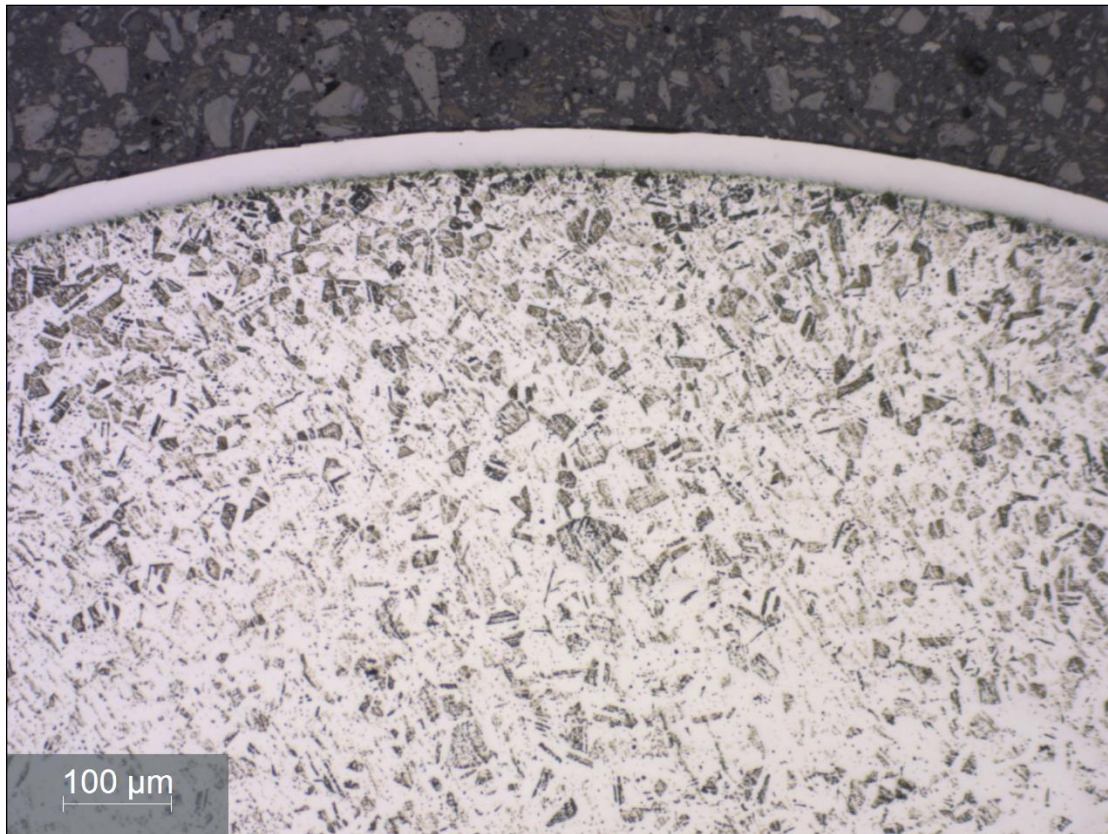


Figure 11: Sample 5 microstructure edge

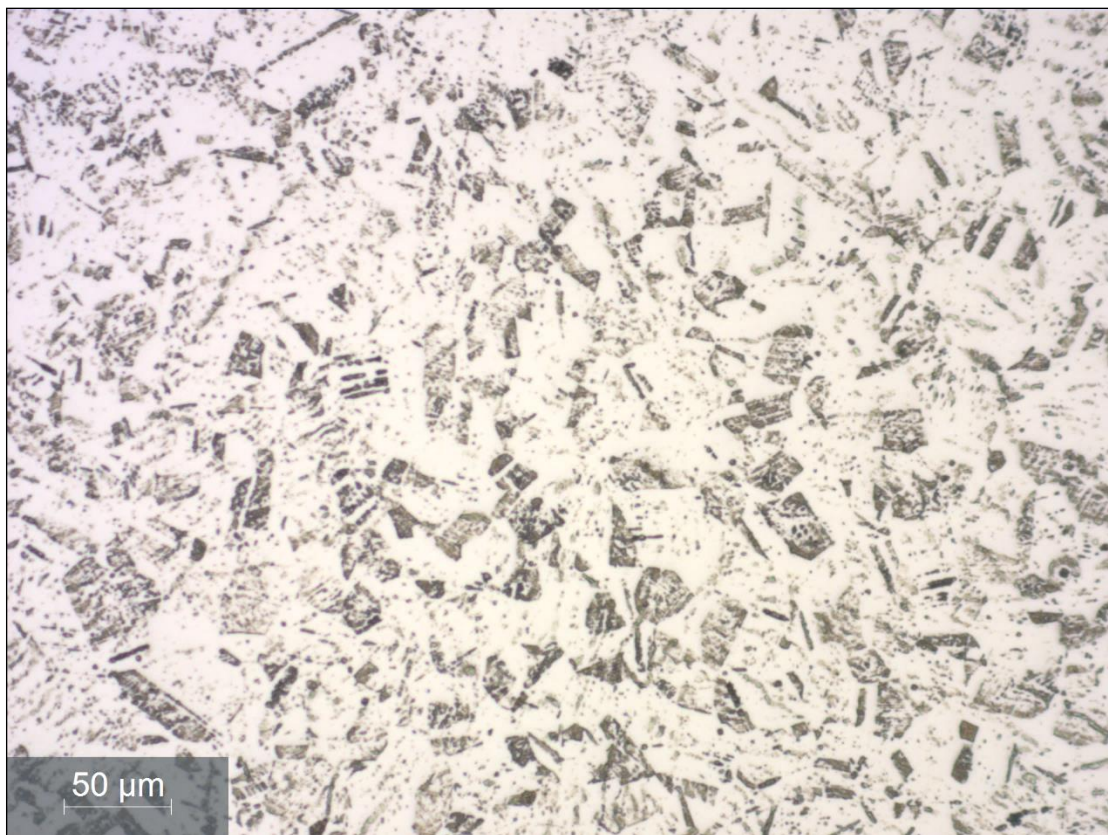


Figure 12: Sample 5 microstructure edge