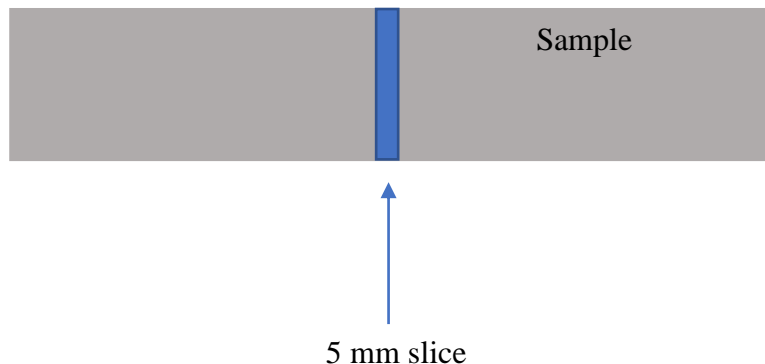

SAMPLE PREPARATION RECOMMENDATIONS

This document is created to share best practices for sample preparation of ThermaSiC coatings, for analyzing microstructure, porosity and microhardness. The technique can be used for APS and HVOF coatings. Other preparation techniques can also be used, but poor preparation can give pull-outs, defects and contamination, affecting porosity and other measurements on the prepared surface

1.1.1 Cutting

A 5 mm slice of the sample is cut from the middle region of the sample in the short direction, using a Struers Accutom-50 with the following parameters:

Blade type:	Al ₂ O ₃
RPM:	2800
Cutting speed:	0.05 mm/s
Force:	Low



1.1.2 Cold Embedding

The slice is placed into a plastic die inside the vacuum chamber. Then, 25 mL of epoxy is poured under vacuum (-0.8 bars). The vacuum is kept for 5 min to increase epoxy impregnation in the porosity. The vacuum is released, and the die is then placed under a fume hood for overnight curing.

Plastic die diameter: 40 mm
Epoxy: Struers EpoFix

1.1.3 Polishing

Recommended polishing program:

<i>Step</i>	<i>Polishing pad</i>	<i>Media</i>	<i>Time [MM:SS]</i>	<i>Force [N]</i>	<i>RPM</i>
1*	DP- 220	Water	0:20	35	300
2	DP- 220	Water	3:00	35	300
3	DP- 220	Water	3:00	35	300
4	DP- 500	Water	3:00	35	300
5	DP- 1200	Water	3:00	35	300
6	DP- 2000	Water	3:00	35	300
7	DP- 4000	Water	3:00	35	300
8	Chem	OP-S	1:00	15	150

*This step aims to remove the edges on top of the mounted sample (polishing upside down)

It is important that the sample is rinsed with water between steps 2 and 3.

The sample and the equipment need to be cleaned between steps to ensure no media contamination is carried to next steps.