


## SOLUTION FOR GRAPHITE MACHINING AND FOR NON-FERROUS METALS

ta-C belongs to the PLATIT DLC3 hydrogen-free coating generation with over 50 % sp<sup>3</sup> content. The high sp<sup>3</sup> bond fraction results in a higher density, hardness (at ambient and elevated temperature), thermal stability, oxidation resistance, residual stress and lower thermal conductivity. Depending on the application from micro-tools to components, ta-C can be deposited by the PLATIT Pi411 or PL711 coating units.

### Highlights:

- Over 50 % sp<sup>3</sup> content
- High density and hardness
- Thermal stability
- Oxidation resistance
- High residual stress
- Low thermal conductivity

Coating unit <b>411</b>		New Coating 	Coating unit <b>711</b>	
Cathode configuration			Cathode configuration	
LGD, -, Cr, C SCIL			Cr, C	
ta-C + a-C (over 50 % ta-C)	<b>Composition</b>		ta-C + a-C (up to 50 % ta-C)	
Tools	<b>Main application</b>		Components	
SPUTTERING	<b>Process</b>		SPUTTERING	
From rainbow colors to anthracite	<b>Color</b>		Anthracite	
0.3 - 1	<b>Coating thickness [µm]</b>		1 - 2	
350 - 450	<b>Young's modulus [GPa]</b>		350 - 450	
45 - 50	<b>Nano-hardness [GPa]</b>		> 30	
Ra ~ 0.06 µm	<b>Roughness</b>		Ra ~ 0.02 µm	
Rz ~ coating thickness			Rz ~ coating thickness	
	<b>Coefficient of friction [µ] PoD (at RT, 50 % humidity)</b>			
~ 0.1			~ 0.1	
450	<b>Max. service temperature [°C]</b>		450	
< 150	<b>Coating temperature [°C]</b>		180 - 250	
CFRP composite material	<b>Workpiece material</b>		Steel	

DLC3 coated endmill under scanning electron microscope:

