

ALPHA SLIDE RAINBOW

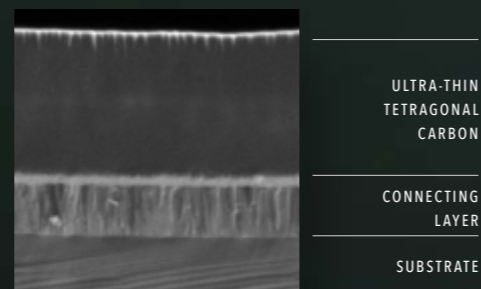
NEW ASR | Innovative coating - Our new coating made of tetragonal carbon

Traditional TAC coatings are usually characterized by their high degree of hardness, very good wear resistance and stable slide characteristics. Our previous TAC Alpha coating met all of these criteria.

Now, our new AlphaSlide Rainbow (ASR) takes TAC coatings to the next level. Thanks to a new coating process that completely dispenses with hydrogen, among other things, we were able to:

- Increase sp3 bonds to over 85 %
- Reduce the coating thickness to less than 1 µm
- Reduce the coating hardness to approx. 4500 HV

STRUCTURE OF THE ALPHASLIDE RAINBOW (ASR)



ASR Improvements to the traditional TAC coating (TAC Alpha)

- Increased tool life when roughing with full slots, trimming and multipass milling
- Better surface quality of the workpiece in finishing, trimming and multipass milling
- Increased smoothness (virtually free from droplets) and thus reduced friction coefficient. Ensures optimum chip evacuation, even in unpolished chip spaces
- Perfect retention of the sharp cutting edges thanks to the natural geometry and defined edge preparation
- High stability of the coating and cutting edges, even in unstable machining situations (e.g. vibrations)
- Prevention of built-up edges, even in unfavourable application scenarios involving adhesive alloys

ALPHASLIDE RAINBOW ASR AT A GLANCE

Structure	Completely hydrogen-free
Layer thickness	< 1 µm
Sp3 bonds	> 85%
Layer hardness	approx. 4500 HV
Biocompatibility	100%*
Friction coefficient	Friction coefficient: approx. 0.05 (dry on steel)
Max. operating temperature	approx. 420–450 °C, dry and wet
Main application	Aluminium (wrought alloys and cast alloys), plastic, copper
Secondary application (limited suitability)	CFRP/GFRP, graphite, Ti alloys and wood

* Biocompatibility must be checked independently by the customer for the respective application

OUR NEW EXN1 SERIES

DETAILED COATING COMPARISON



Comparison of the tool life when roughing in AlMg3

In addition, our new AlphaSlide Rainbow coating successfully prevailed over our previous TAC Alpha coating and the coatings of competitors in the comprehensive field test with regard to tool life.

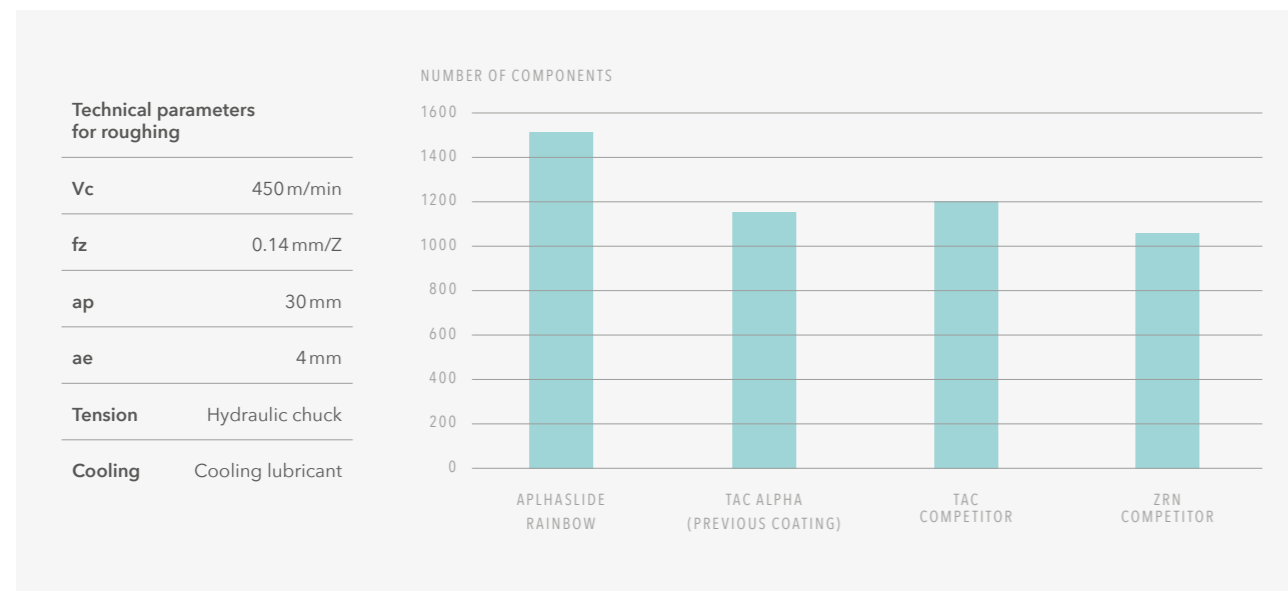
TOOL LIFE CRITERION = BUILT-UP EDGE AND BREAKOUTS

EXN1-M01-0103-16 (3-cutting edge end mill cutter, Ø 16, 2xD)	Number of components
AlphaSlide Rainbow	1500
TAC Alpha (previous coating)	1150
TAC competitor	1200
ZrN competitor	1050

Comparison of the surface quality when roughing with a subsequent finishing process in AlMg3



Measured value*	AlphaSlide Rainbow (ASR)	TAC Alpha (previous coating)	TAC competitor	ZrN competitor
Straightness	0.0012 mm	0.0026 mm	0.0097 mm	0.0092 mm
Roughness (Ra)	0.810 µm	1.06 µm	1.821 µm	2.133 µm



Technical parameters for roughing		Technical parameters for finishing	
Vc	450 m/min	Vc	450 m/min
fz	0.14 mm/Z	fz	0.05 mm/Z
ap	30 mm	ap	30 mm
ae	4 mm	ae	0.2 mm
Tension	Hydraulic chuck	Tension	Hydraulic chuck
Cooling	Cooling lubricant		

*Determined using a measuring sensor on the machined workpiece