

# “ULTRAFINE”

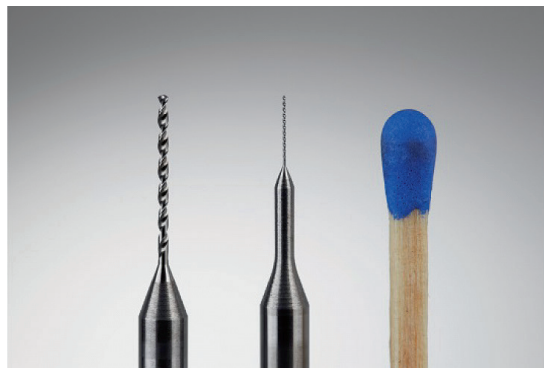
Smooth and glossy PVD arc coatings – even without post-finishing

For us, ‘ultrafine’ is a designation for a series of hard coatings with a decisive plus when it comes to smooth and yet extremely well-bonded and hard PVD arc coatings. Anybody can do “smooth”. But smooth, hard, very well-bonded and economical? That is no small feat. Our SPCS technology enables us to achieve precisely this.

SPCS stands for “**S**trongly **P**oisoned **C**athode **S**urface” and describes our special PVD arc coating process, in which we can produce excellent coating properties using innovative gas control.

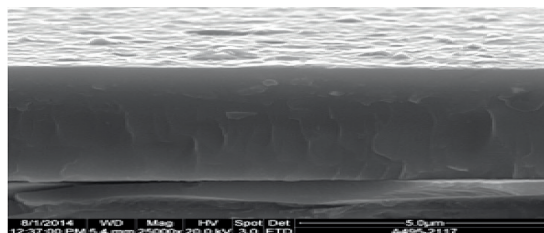
## APPLICATIONS

<b>Cutting</b>	Cutting Microcutting
<b>Other</b>	Plastic injection Medical technology



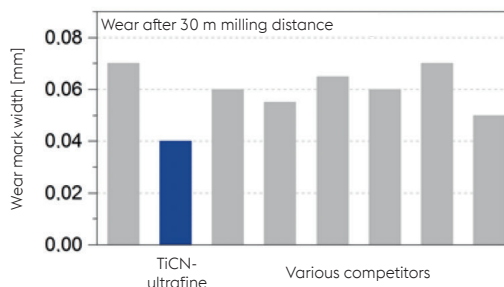
Microcutting: low-defect and smooth SISTRAL®-ultrafine

This process is already currently used in series production: TiN-ultrafine, TiCN-ultrafine and SISTRAL-ultrafine are established. These smooth and low-defect coatings are characterised by their excellent adhesive strength and exceptional hardness in a wide variety of applications:



Fracture pattern of a SISTRAL®-ultrafine PVD coating: smooth and dense

## BENCHMARK TEST OF TiCN ULTRAFINE: MILLING OF HOT WORK STEEL



Milling with HSS milling cutter (4 cutting edges,  $\varnothing$  10 mm) in 1.2738 hot work steel (40CrNiMo 8-6-4)  
 $v_c = 60$  m/min,  $f_z = 0.05$  mm,  $a_p = 12$  mm,  $a_e = 2.5$  mm, milling distance = 30 m, down-milling = 50%