

# Measurement of Hard Material Coatings

Non-destructive measurement of hard material coatings

- Coating thickness and material analysis according to the X-ray fluorescence method or the magnetic induction method
- To control your coating process and insure uniform coating distribution
- Martens hardness
- For inspection of cobalt leaching

FISCHER instrumentation offers ...

- High-precision coating thickness measurement and materials analysis
- Automated measurement capability for economical operation
- Superior service before and after purchase
- Application support based on knowledge of the underlying physics and practical experience

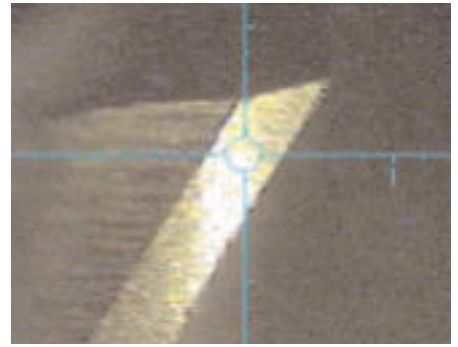


**Coating thickness measurement according to the X-ray fluorescence method**

Coating layers TiN, TiCN, TiAlCN, ZrN or CrN can be tested for correct thickness. Precise, non-destructive measurements can be made manually or with fully automated specimen positioning. Very small measurement spot, e.g. only 50x50 µm, means: the layers can be measured exactly where they undergo the highest degree of stress in practical use, namely at the cutting edges.



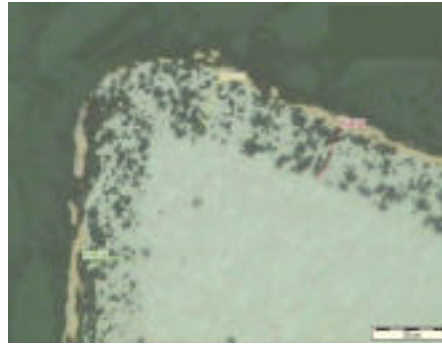
FISCHERSCOPE® X-RAY XULM®



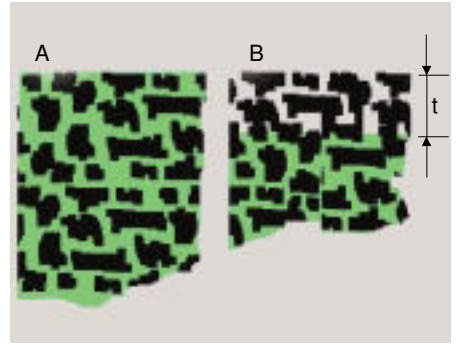
Video image of a specimen

**Cobalt Leaching**

The depth of cobalt (Co) leaching on various substrates can be measured directly with the X-ray fluorescence method. This provides immediate recognition of whether the substrate is usable for a later coating process there by avoiding chipped coatings in production.



Co-Leaching on a cutting-alloy tip



A: Perfect adhesion of the surface layer  
B: Leaching until depth T

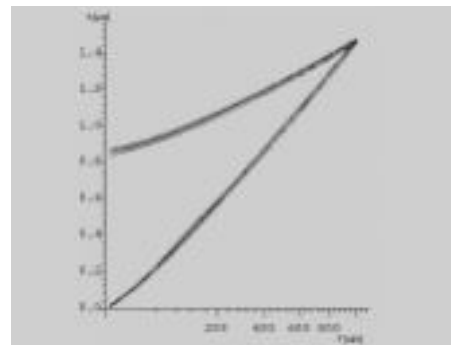
**Determination of mechanical-technological features of hard material coatings with the FISCHERSCOPE® H100C**

This semi-automated measurement process delivers information and comprehensive results. Measure and determine material characteristics as per ISO 14577:

- Martens hardness HM
- Converted Vickers hardness HV
- Elastic modulus  $E_{IT}$
- Creeping  $C_{IT}$  etc.



FISCHERSCOPE® H100C XYp



Graphical depiction of a hardness measurement on a 3 µm hard material layer on steel

**DLC and Diamond hard material coatings**

Suitable methods for non-destructive testing are:

- Beta Backscatter method
- Magnetic induction method with bench-top instrument MMS® PC (see figure right) or hand-held instrument (see figure left).

For all applications and geometries of the specimen we offer suitable instrumentation, including a large variety of measurement probes.



Hand-held measuring instruments with probes



FISCHERSCOPE® MMS® PC

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Subjects to changes

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