APPLICATION NOTE

QUALITY CONTROL IN THE PRODUCTION OF RAZOR BLADES AND SCALPELS BY USING SATURATION

Microscopy and X-ray methods are too slow for blade production control. KOERZIMAT 1.097 MS enables fast, reliable magnetic phase quantification.

THE CHALLENGE

Razor blades and scalpels require precisely defined mechanical properties such as hardness, wear resistance and edge retention. These properties depend directly on the proportion of martensitic and other phases in the stainless steel. Conventional analysis methods like microscopy or X-ray diffraction are time-consuming and unsuitable for fast production control.

THE SOLUTION

The KOERZIMAT 1.097 MS determines magnetic phases using the saturation polarization (SP) method in accordance with IEC 60404-14. Since martensite, bainite and ferrite are ferromagnetic while austenite is paramagnetic, the SP measurement enables fast quantification of the magnetic phase fraction. The integral measurement requires no specimen preparation and is independent of component geometry.

THE RESULT

The system provides rapid and precise monitoring of phase composition during manufacturing and incoming inspection. Deviations in martensite content are detected early, ensuring consistent cutting performance and product quality. The magnetic method reduces inspection time while enabling reliable process control in blade and scalpel production.

KOERZIMAT 1.097 MS

Systems for measuring the saturation polarization σs and Js

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