



Product Sheet XRF 14

S2 PUMA Series 2 with Mapping-Stage

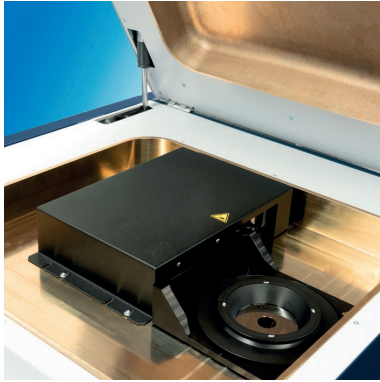
- Automated Multi-Spot Quality Monitoring for Coatings and More

Production processes are not always yielding homogenous material in two dimensions. Coatings or paint may vary in thickness between the center and the rim of a material. Production parameters such as temperature and time can cause compositional variations. For other products, local coatings and local differences in alloying composition are used to achieve certain material properties, while using expensive compounds and additives sparsely, such as Ti-coatings of sawblades.

To monitor product quality and help continuously improving and cost-optimizing your manufacturing

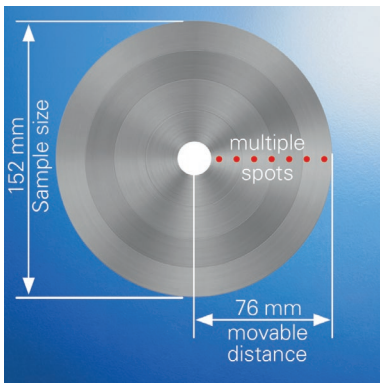
process, Bruker introduces a versatile motion stage for the S2 PUMA Series 2, our high-end energy dispersive X-ray fluorescence (EDXRF) spectrometer. This Mapping-Stage makes 1D quality monitoring easy and efficient. It allows to spatially quantify the elemental composition of your product with the push of a button: Fast, accurate, and non-destructive!

Flexible sample size (up to 15.2 cm x 15.2 cm), high spatial resolution (down to 1 mm), various compositions (Si-Am) – The S2 PUMA Series 2 with Mapping-Stage can do the job!



The Mapping-Stage

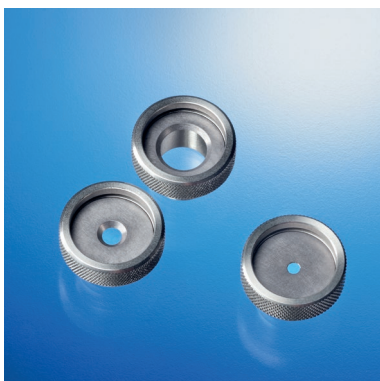
The S2 PUMA Series 2 with Mapping-Stage makes multi-spot quality monitoring an easy task (Figure 1). It lets you quantify the elemental composition of your sample or even the thickness of a coating with high accuracy and spatial resolution (down to 1 mm). The linear motion-drive positions the sample precisely and reproducibly. The actual position can be recorded with an integrated HD camera.



- Automated multi-position analysis at high spatial resolution and on large samples with up to 152 mm in diameter.



- Inserts can be customized to fit samples with different shapes (disks, rods, squared & rectangular plates) and sizes (max. diameter 152 mm / 6").



- Collimator masks enable to adjust the spot size from 34 mm down to 1 mm.

Various Applications

The Mapping-Stage of the S2 PUMA Series 2 fills the gap between bulk measurements and more expensive and time consuming, high-end 2D μ -XRF Mapping. It is the ideal tool whenever multiple locations need to be measured to properly monitor and evaluate production processes and product quality. Applications include

- Coating homogeneity
- Coating thickness (one-layer)
- Paint homogeneity
- Material homogeneity
- Chemical composition

Measure the thickness and/or homogeneity of a Co, W or Zn layer on a hard-disk. Determine the homogeneity of alloys such as W, Ni and Mo in tool steel or Pb in brass. Check the Ti-coating quality of drill bits and sawblades. The Mapping-Stage configuration of the S2 PUMA combines high spatial resolution and reproducible positioning with the analytical benefits a high-end EDXRF elemental analyzer.



Key Benefits

The Mapping-Stage extends the application range of the S2 PUMA Series 2 into semiconductors and coatings, where spatial resolution is required. Unrivalled analytical performance for elements from Si-Am is guaranteed via

1. **Optimal Sample Excitation:** High-power 50 W X-ray tube; automatic 10-postion primary beam filter wheel
2. **Optimal Signal Detection:** Closely-couple beam optics for minimal loss of intensity; HighSense detector with ultra-high count rates and excellent energy resolution

The 50 W power generates high count rates even for small spot (1 mm) analysis. Accurate elemental concentrations are available within minutes!

The multilingual TouchControl™ interface allows to operate the S2 PUMA after minimal training and start routine measurements with the push of a button. The next generation software package SPECTRA.ELEMENTS combines usability and speed with functionality. Smooth operation, compliant with your laboratory and data management policy, is ensured by: Dedicated user levels, customizable views and basic mode, flexible and powerful reporting and post-processing options, full-LIMS compatibility, and more.

Monitor your product quality, improve your manufacturing processes and optimize the use of expensive materials used for property enhancement – All with the S2 PUMA Series 2 with Mapping-Stage!

Table 1: Technical Specifications

S2 PUMA Series 2 with Mapping-Stage	
Max. sample size	152 mm x 152 mm (6" x 6")
Sample shape	Flexible (round, squared, rectangular)
Movable distance in X	0 mm to +76 mm
Min. step size	0.1 mm
Spot size	1 mm to 34 mm
Atmosphere mode	Air
Element range	Si to Am
X-Ray Tube	Pd anode; max. power: 50 W; max. voltage 50 kV (30 kV option available)
Detector	HighSense™ – Next generation silicon drift detector (SDD); Peltier cooled, DustShield™ protected
HD Camera (optional)	For documentation

Bruker AXS is continually improving its products and reserves the right to change specifications without notice.
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