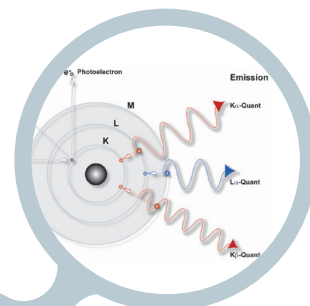




1µS

Ceramic tube



TWIST-TUBE

Product Sheet XRD 25

Sealed X-ray Tubes for XRD

Standard ceramic tube

Bruker's standard ceramic tubes are 100% compatible with the traditional glass tubes for X-ray diffraction. The main benefit of ceramic insulation versus glass insulation is the higher reproducibility of the focal spot position. This facilitates the change of tube in case of tube replacement or change of wavelength. The improved design of the cathode leads to a longer life compared to conventional glass tubes. The design of the ceramic tubes guarantees state-of-the-art spectral purity. Standard ceramic tubes are available with line and spot focus, different focus dimensions, and in a wide variety of anode materials.

Whereas most powder diffraction applications on polycrystalline samples are done with line focus, texture measurements or stress measurements in side-inclination mode ideally require spot focus. Switching between standard ceramic tubes with line and spot needs draining off the cooling water, disconnecting cables and hoses, exchanging the tube etc. ... all in all a great effort.

TWIST-TUBE

Bruker's patented TWIST-TUBE technology makes switching between line and spot focus straightforward with a single tube. Simply release fixtures, rotate tube head, fix in position and start measuring. There is no need to disconnect cables or unscrew the X-ray tube. Thanks to DAVINCI. MODE no realignment is required, and the focus orientation is automatically detected. The Long Fine Focus ceramic TWIST-TUBE is available for different wavelengths.

1µS - microfocus X-ray source

Patterned wafers, forensic samples, inclusions in geological materials ... These very diverse samples have one thing in common: the area of interest is very tiny. A microfocus X-ray source enables boosting the primary beam intensity on such a small sample area. Thanks to the smaller focal size, the generated X-rays are more efficiently captured by the subsequent MONTEL optics.

As a result, the μ S X-ray source can be operated at low power and still provides flux density on the level of traditional rotating anode sources. Because it consumes very little power and uses integrated air-cooling, this unique X-ray source is a real “green” solution compared to other types of high-performance X-ray sources. Last but not least, the maintenance-free design and 3-year warranty contribute to the attractive cost-of-ownership.

All sealed X-ray tubes for the D8 family of the DAVINCI generation have built-in a recognition chip that is read by software, enabling real-time recognition of tube type and focus direction. This eliminates the risk of selecting inappropriate tube setting. In addition, an optimized burn-in procedure is automatically started depending on the tube history, which helps extending tube life time.

Table 1: Selection of the most common anode materials with respect to the application

Anode Material	$K \alpha_1$ (nm)	Application
Cr	0.22897	Residual stress analysis on steel, retained austenite analysis
Co	0.17889	General powder diffraction
Cu	0.1540562	General powder diffraction, residual stress analysis on aluminum and titanium alloys, thin film analysis such as high resolution XRD, reflectometry and texture
Mo	0.070930	Structure determination of inorganic samples in transmission geometry, PDF analysis, retained austenite analysis
Ag	0.05594	PDF analysis

Table 2: Technical Data

	Standard tube	TWIST-TUBE	μ S
Focus type	Line or spot	Line and spot	Spot
Focus dimension	KFL Long fine focus (0.4 x 12 mm ²) KFF Fine focus (0.4 x 8 mm ²) KFN Normal focus (1 x 10 mm ²)	KFL Long fine focus (0.4 x 12 mm ²)	Microfocus
Target material	Cr, Co, Cu, Mo, Ag On request W, Mn, Ti, Fe, etc.	Cr, Co, Cu, Mo	Cu On request Cr, Co, Mo, Ag
Max. voltage	Up to 60 kV	Up to 60 kV	Up to 50 kV
Max. power*	Up to 3.0 kW for KFL Up to 2.0 kW for KFF Up to 2.4 kW for KFN	up to 3.0 kW	Up to 50 W
Cooling	Water-cooled**	Water-cooled**	Air-cooled

* Depending on target material

** Flow-rate \geq 3.6 l/min, water temperature 15 – 20°C recommended (avoid condensation), water pressure 4 – 7.5 bar

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