



Product Sheet XRD 38

MTC-HIGHTEMP - Fast Sample Heating

The MTC-HIGHTEMP is designed for high temperature X-ray diffraction in reflection mode on a vertical goniometer.

The MTC-HIGHTEMP features a metallic heating strip for directly heating fine powder samples up to 1600°C. The direct contact between sample and strip heater enables fast temperature ramping.

Different metallic heating strips are available. A PtRh heating strip can be used under inert and oxidative conditions, but may react with samples containing Si, Pb, Sn, etc. A Ta heating strip has a good chemical resistance, but operation above 300°C requires high vacuum to avoid oxidation. The thermal elongation of the heater is automatically compensated by a spring loaded turnable electrode. This ensures a constant sample position over the full temperature range.

- Direct heater
- RT to 1600°C
- For power samples
- Fast temperature ramping
- Modular chamber design



MTC-HIGHTEMP chamber with motorized height alignment stage



MTC-HIGHTEMP interior

The actual temperature is measured with a thermocouple, welded at the back of the heater. The sample is prepared as a thin layer on top of the heating strip. Consequently, only very little material is required. A screen can be positioned just above the sample to reduce scattering by air and the X-ray window at low angles.

The MTC-HIGHTEMP is an integral part of the DAVINCI design. The stage is mounted to the D8 goniometer through a bayonet interface, which allows fast and reproducible exchange with other sample stages.

As a member of our MTC family of modular non-ambient chambers, the MTC-HIGHTEMP can be easily reconfigured to other MTC-type chambers by simply exchanging the heater and sample holder unit.

As you may expect of an integrated solution, setting up a measurement to the final data evaluation is fully supported by our DIFFRAC.SUITE software.

MTC-HIGHTEMP - Technical Data	
Temperature Range	PtRh heater: RT to 1600°C for short time, 1450°C for continuous operation Ta heater: RT to 1500°C, above 300°C high vacuum* required
Atmosphere	Vacuum, air, inert gas (He, N ₂)
Heater Material	PtRh or Ta
Sample Holder Material	Identical to heater
Thermocouple	Type S, welded on the back of the heating strip
X-Ray Window Opening	12 mm wide, -10° to 190° 2Theta
X-Ray Window Material	Kapton
Required Accessories	
	Temperature controller: Control Unit TCPU1
	Height alignment adapter (manual or motorized)
Options	
	Vacuum pump unit
	Ta-heater strip with welded type S thermocouple
	Valves and stainless steel tubes for inert gas operation

*) better than 10⁻⁴ mbar (turbo molecular pump required)

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