



HPC 900 High-Pressure Chamber

The HPC 900 is a novel and unique chamber for X-ray diffraction experiments up to 100 bar and 900 °C. It allows users to perform studies of solid state and solid state-gas reactions in various gases at high temperatures and very high pressures, at the same time providing easy sample exchange and good X-ray transmission.

Non-ambient XRD at a new level!

Leading the way

Anton Paar has always been determined to push back technical boundaries and meet scientists' requests for ever more demanding sample chambers.

We are proud to present the latest and most powerful asset to our wide range of non-ambient attachments: the HPC 900 High-Pressure Chamber.

This unique sample stage allows users to perform in-situ XRD experiments in inert and reactive gas atmospheres including hydrogen up to 100 bar and 900 °C.

It enables entirely new studies in many scientific fields, among them hydrogen storage, fuel cell research and catalysis.



The 'two-shell' concept

In order to meet the various requirements imposed on an instrument for high pressure, high temperature and explosive gases, the HPC 900 High-Pressure Chamber features a 'two-shell' design.

The compact inner shell is the pressure container, housing the sample, the heater and the reactive gas. The outer shell ensures that no hazardous gas escapes into the environment even in case of leakage from the inner part.

Despite the high requirements regarding the mechanical strength of all components, HPC 900 has sufficient X-ray transmission to be operated with standard molybdenum X-ray tubes on laboratory diffractometers.

Easy handling – good temperature control

Although HPC 900 is designed as a high pressure vessel, it provides easy sample mounting without any tools. The sample cup can easily be detached from the sample holder, and cups made of different materials can be used.

The sophisticated furnace of HPC 900 creates excellent temperature uniformity around the sample. The temperature sensor is located directly underneath the sample inside the sample holder, which guarantees reliable measurement and control of the sample temperature.

The compact design of the inner shell results in a homogeneous gas atmosphere around the sample without dead volumes. Heat convection ensures that the sample surface is always in contact with fresh gas.

Safety first

Operator safety was the first priority when we designed HPC 900. All components are made of mechanically robust and chemically resistant materials, which provides high reliability and ensures the chamber's long working life.

A number of safety devices ensure safe operation of the instrument, and the 'two-shell' design protects the environment even in case of gas escaping from the inner sample chamber.

Features and benefits

- ▶ CE/UL certified for hydrogen and other reactive gases up to 100 bar
- ▶ Furnace heater for excellent temperature uniformity up to 900 °C
- ▶ Reliable measurement and control of the sample temperature
- ▶ Homogeneous gas conditions inside the chamber without dead volumes
- ▶ Easy sample exchange
- ▶ Two-shell design for maximum safety
- ▶ Fits on all common X-ray diffractometers

Technical Specifications

Temperature range	25 to 900 °C *
Pressure range	1 bar to 100 bar
Atmospheres	H ₂ , N ₂ , O ₂ , CO ₂ , air, He
Sample holder	Ceramics, Inconel
X-ray geometry	Reflection
X-ray transmission	60 % for Mo K α radiation

* Upper limit depending on gas type and pressure

Your distributor: