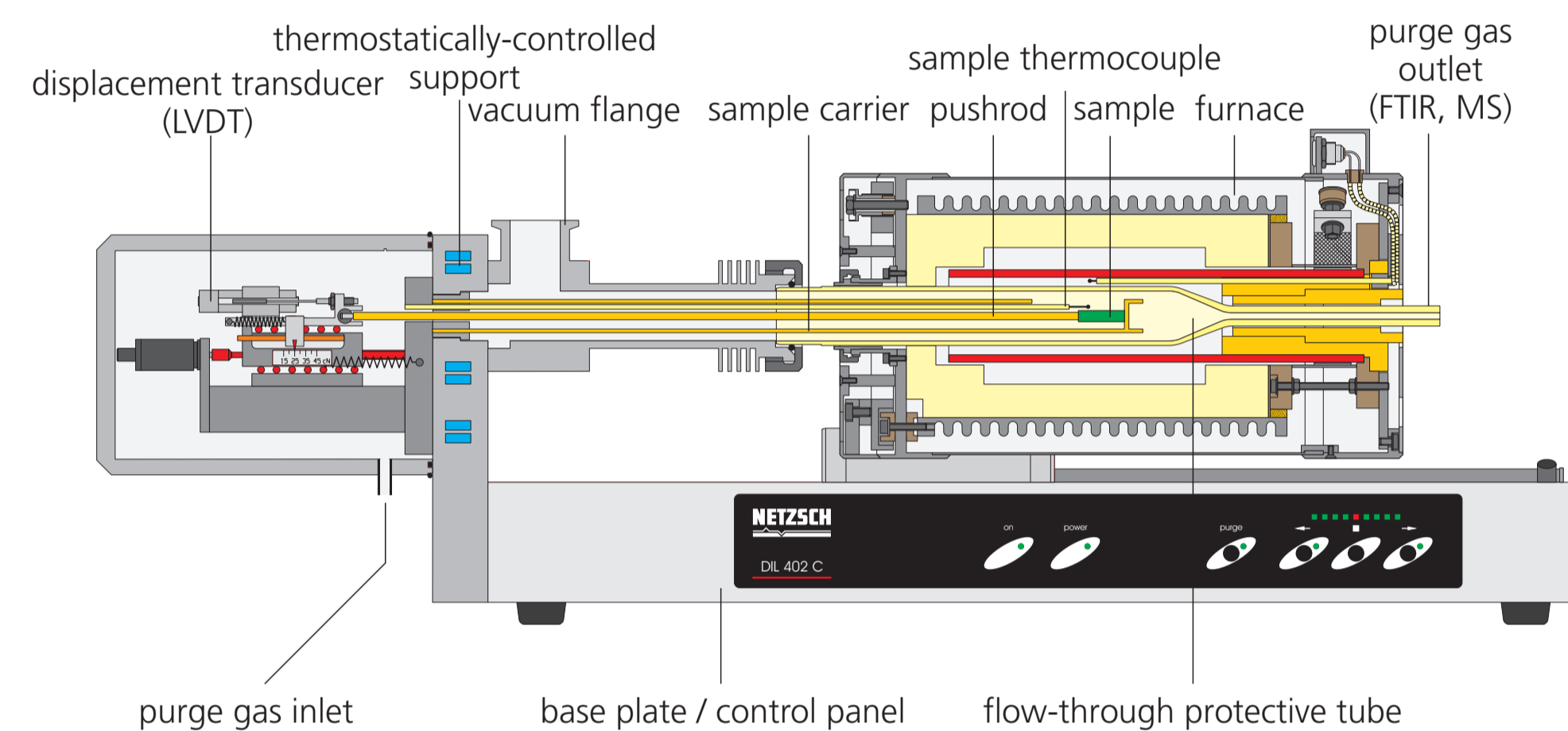


Leading Thermal Analysis.

# Dilatometer DIL 402 C

## Dilatometry

A technique in which the dimension of a substance under negligible load is measured as a function of temperature while the substance is subjected to a controlled temperature program. (ICTAC, ASTM E 473-85)



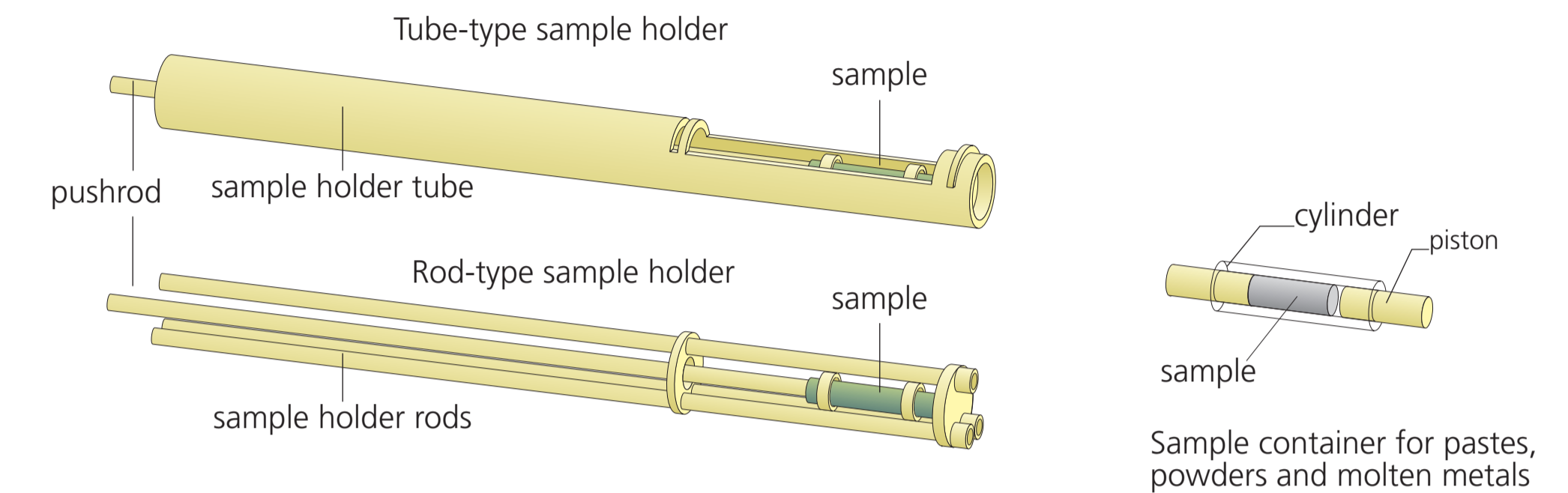
## Features

- Plotting of the absolute or relative expansion/shrinkage curves
- Various correction options
- Semi-automatic routines for determination of onset, peak and end temperatures
- Glass transitions and dilatometric softening points
- Analyses in accordance with DIN (German standards)
- Automatic softening point detection and switch-off
- Derivation of curves for determination of the temperature- or time-dependent linear expansion rates
- Expansion coefficients: calculation and graphic presentation of the technical and physical expansion coefficients
- Analysis of sintering temperatures
- Automatic determination of the shrinkage during a sintering step
- c-DTA® for the calculated DTA-signal from dilatometer measurements, ideal for temperature calibration
- Rate-controlled sintering (RCS) (option)



DIL 402 C

## Sample Holder

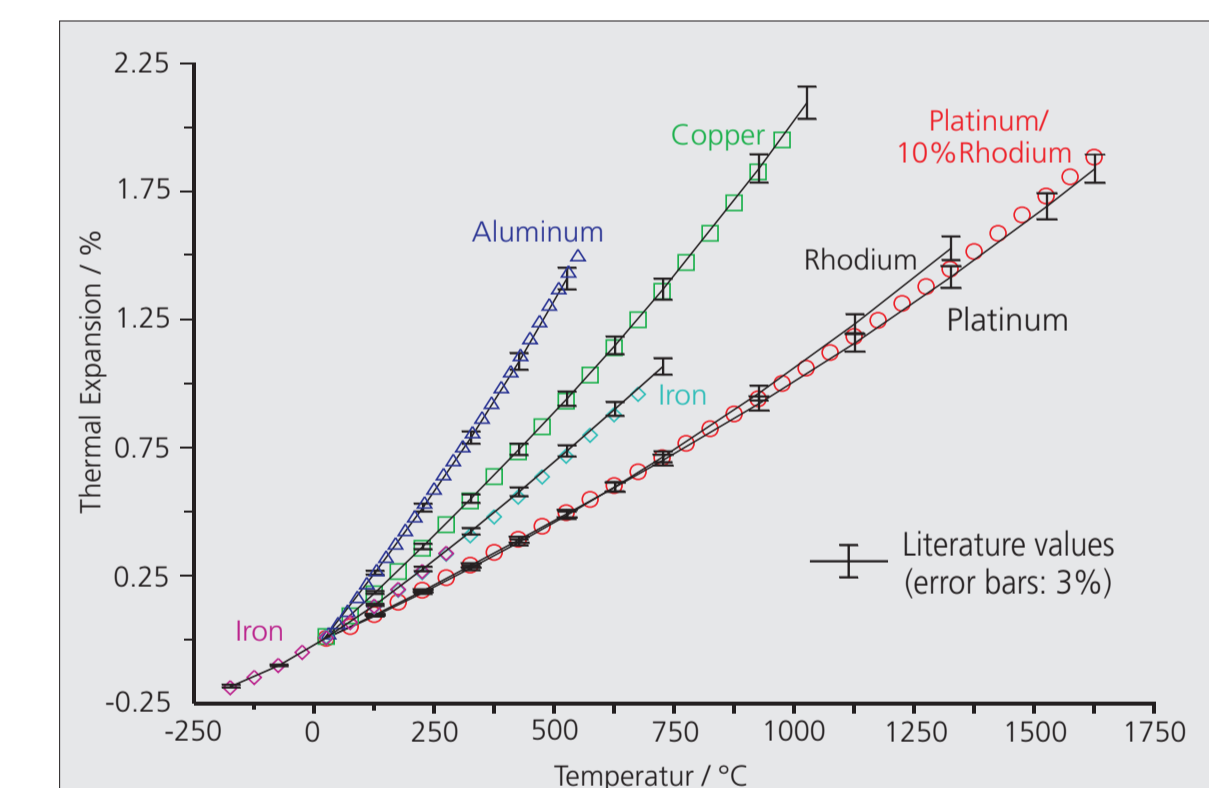


## Application

### Outstanding Accuracy

In this example the linear thermal expansion of pure aluminum, copper and electrolytic iron are compared with literature values (Touloukian et al.\*). Clearly there is excellent agreement. The differences are generally less than 1%. In addition, Pt/10%Rh was compared with the values for platinum and rhodium. The test results demonstrate the good correlation as expected from pure metals.

\*Reference



## Specifications

- Temperature range: -180°C ... 500°C, RT ... 1100°C, RT ... 1600°C, RT ... 2000°C (4 exchangeable furnace types)
- Heating and cooling rates: 0.01 K/min ... 50 K/min (dependent on furnace)
- Sample holder: fused silica <1100°C, Al<sub>2</sub>O<sub>3</sub> <1700°C, graphite 2000°C
- Measuring ranges: 500/5000 μm
- Sample length: max. 50 mm
- Sample diameter: max. 12 mm (19 mm optional)
- Resolution: 0.125 nm / 1.25 nm
- Atmospheres: inert, oxidizing, reducing, static and dynamic
- Gas flow meter and valve for purge gas (optional)
- Highly vacuum-tight up to 10<sup>-4</sup> mbar (10<sup>-2</sup> Pa)