

DIL 402 *Expedis Supreme and Select*

Design	Pushrod dilatometer, single or dual system
Furnaces	Different types, interchangeable: steel, copper, SiO ₂ , SiC (optional furnace for fast cooling available), Rh; graphite (only for <i>Supreme</i> version)
Heating rates	Depending on furnace type: <ul style="list-style-type: none"> ▪ Steel, copper, fused silica, silicon carbide: 0.001 ... 50 K/min ▪ Graphite: 0.001 ... 100 K/min
Cooling systems	Depending on furnace: Vortex, LN ₂ -device, air compressor
Sample holder systems	SiO ₂ , Al ₂ O ₃ , graphite (<i>Supreme</i> version), user interchangeable All sample holders are available as <ul style="list-style-type: none"> ▪ Single system (one pushrod) ▪ System with two pushrods usable in dual or differential mode ▪ Al₂O₃ tension sample holder* SiO ₂ and Al ₂ O ₃ sample holders can be purchased as tube or rod design
Sample dimensions	Max. length: 52 mm (graphite furnace: 25 mm) Diameter (single): standard 12 mm, optional 19 mm Diameter (dual): 8 mm
Automatic sample length determination	Yes, in expansion mode
Displacement system	<i>NanoEye</i>
Temperature accuracy / precision / resolution	1 K / 0.1 K / 0.001 K
Thermal stability (isothermal)	± 0.02 K
Temperature calibration	Displacement method (by using metal references and protective disks) or via <i>c-DTA</i> ® (optional for <i>Select</i> version; incl. endo/exothermal effects)
Measuring range	± 25000 µm (<i>Supreme</i> version) ± 10000 µm (<i>Select</i> version)
ΔL Resolution	0.1 nm (<i>Supreme</i> version) 1 nm (<i>Select</i> version)
ΔL/L ₀ Repeatability	0.001 %, absolute value
ΔL/L ₀ Accuracy	0.002 %, absolute value
Force range (load at the sample)	10 mN ... 3 N (valid for compressive and tensile force depending on the sample holder)
Change of force	<i>Supreme</i> version: various options, incl. modulated forces <i>Select</i> version: changeable per segment (constant & ramp)
Force resolution	0.001 mN
Gas atmosphere	Inert, oxidizing, reducing, vacuum
Gas control	MFC <ul style="list-style-type: none"> ▪ Standard: 1 x protective gas ▪ Optional: 1 x protective gas, 2 x purge gas
Oxygen Trap System (OTS®)	Optional, for single and for dual sample holder systems
Software	Windows 7 32/64 bit Professional®, Windows 7 32/64 bit Enterprise®, Windows 7 32/64 bit Ultimate®, Windows 8.1 Pro® and Enterprise®, Windows 10 Pro® and Enterprise®

* Please note, using the tension sample holder has an influence on the noise behavior.

Configurations

NETZSCH

Feature	Supreme	Select	Supreme HT
Temperature range	-180°C ... 2000°C	-180°C ... 1600°C	(-180°C)* ... RT ... 2800°C
Measuring range	50 mm (± 25 000 µm)	20 mm (± 10 000 µm)	50 mm (± 25 000 µm)
ΔI Resolution (over entire measuring range)	0.1 nm	1 nm	0.1 nm
Double furnace sliding carrier	■	■	N/A
Motorized furnace operation	□	□	■
Vacuum-tight design	■	■	■
Automatic Evacuation System – <i>AutoVac</i>	□	□	□
Mass Flow Controller (MFC) – single/triple	■ / □	■ / □	■ / □
Available Cooling Devices	Vortex, LN ₂	Vortex, LN ₂	Vortex, LN ₂
Electrical temperature control of the measuring cell	■	■	■
Force change (ramp, step at each new segment)	■	■	■
Force modulation	■	□	■
Single/double DIL	■ / □	■ / □	■ / □
Automatic sample length detection	■	■	■
Softening Point detection	■	■	■
<i>Density Determination</i>	■	□	■
<i>c-DTA</i> [®]	■	□	■ **
RCS (Rate-Controlled Sintering)	■	□	■
<i>Identify</i>	■	□	■
Evolved gas analysis (coupling with GC-MS/QMS and/or FT-IR) – for SiC furnace	□	□	□

* DIL 402 *Expedis Supreme* HT with adapter for standard furnaces

** Not above 2000°C, only by thermocouple operation

Both instrument models work on the basis of DIN 51045, ASTM E228, ASTM D696 or DIN EN 821.

- Included in standard configuration
- Optional
- N/A Not applicable