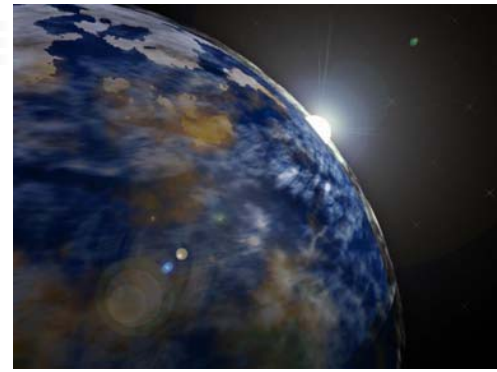
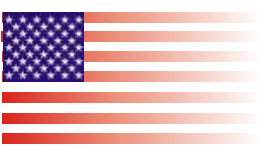


L75 PLATINUM



thermal analysis
with **out** limits



LINSEIS

Reo**Term**
Preci**Labo**

Dilatometry is a technique which measures the dimensional change of a substance as a function of temperature while the substance is subjected to a controlled temperature program.

Many international norms such as DIN 51045, ASTM E 831, ASTM E 228 and ASTM D 3386 describe this technique and the exact procedures in detail.

LINSEIS Dilatometers L75H (horizontal), and L75V (vertical) provide a powerful tool for the determination of the thermal expansion and expansion coefficient (CTE).

Further application examples are the evaluation of sintering processes of ceramics, metals and powder metals, the dimensional changes during chemical reactions (Oxidation) and phase changes of solid materials.

As a unique feature LINSEIS offers its range of Dilatometers either in horizontal or vertical mode of operation to provide the perfect solution for every application and budget.



Picture: Dilatometer L75 PT1600

Dilatometers are typically used in:

- Glass industry
- Ceramics industry
- Sintering of high tech ceramics
- Aerospace industry
- Metal/powder industry
- New material research
- Automotive industry
- Polymer industry
- Linear thermal expansion (ΔL)
- Sinter-temperatures and sinter-steps
- Determination of glass transition (T_g)
- Phase changes
- Optimization of burning processes
- Determination of thermal expansion coefficient (CTE)
- Volume changes
- Rate controlled sintering (RCS)

Dilatometers are frequently used for R&D and Quality Control of solids, liquids, powders and pastes to determine their:

The entire range of LINSEIS Dilatometers enables the perfect choice for any application.

LINSEIS L75 series are available in horizontal as well as vertical (Zero – Friction) mode of operation.

It offers a broad temperature range, many different sample holders, operation in vacuum or a controlled oxidizing and reducing atmosphere, while maintaining the highest accuracy and ease of use.

Measurement system:

All measuring systems are manufactured to the highest standards and equipped with an LVDT sensor which provides the maximum precision, repeatability, and accuracy.

Our Dilatometers have significantly benefited from the extensive research undertaken from the patented LINSEIS LASER Dilatometer.

Automatic pressure control:

The contact pressure can be continuously varied between 10 and 999mN depending on the application.

This feature continuously adjusts the contact pressure throughout expansion and/or shrinkage of the sample.

Vacuum atmosphere:

The vacuum tight construction (up to $10E-5$ mbar) of the L75 series permits measurements in the purest gas atmospheres.

This feature is essential in preventing unwanted effects due to sample oxidization.

Integrated DTA signal:

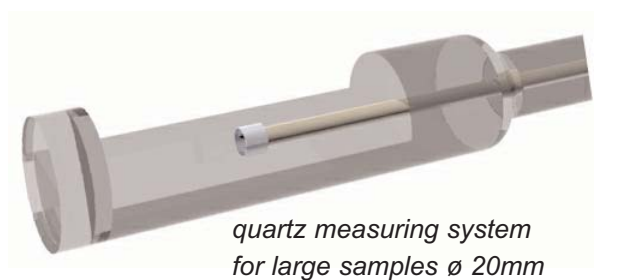
All LINSEIS L75 series dilatometers are optionally equipped with the DTA evaluation feature.

This provides the user with valuable additional endo- and exothermic sample information.

Special Dilatometers & Accessories:

LINSEIS manufactures a broad range of exceptional Dilatometers and accessories. Systems can be specifically designed to meet a broad range of unique applications.

Please call or visit our Webpage for more information.



*quartz measuring system
for large samples \varnothing 20mm*



*Al₂O₃ measuring system
standart*



*Al₂O₃ measuring system
contact free*



*quartz measuring system
 \varnothing 7/12 mm*



Adapter for powders and pastes

Software:

All LINSEIS thermo analytical instruments are PC controlled.

The individual software modules exclusively run under Microsoft® Windows® operating systems.

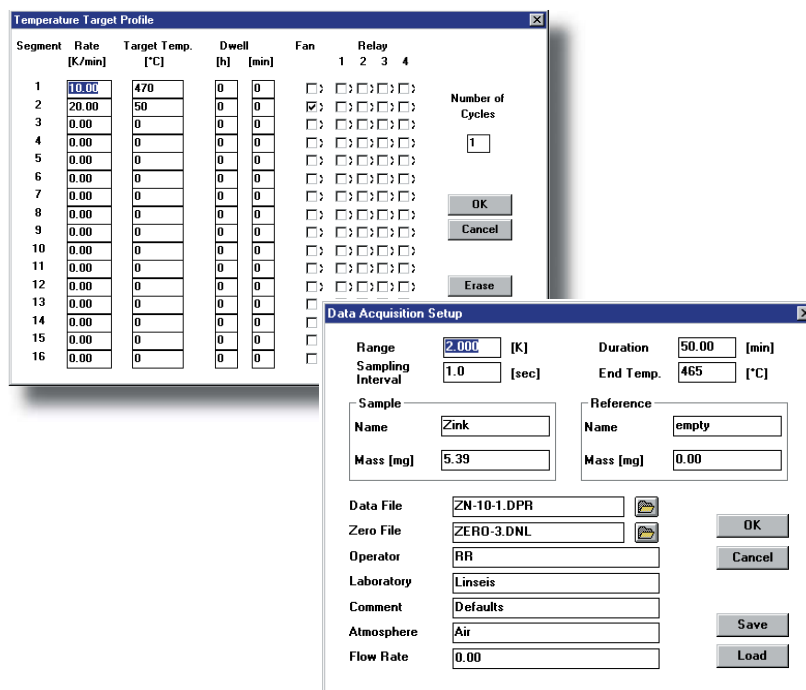
The complete software consists of 3 modules: temperature control, data acquisition and data evaluation.

The 32 bit software incorporates all essential features for measurement preparation, execution, and evaluation of a Dilatometer run.

Thanks to our specialists and application experts, LINSEIS was able to develop comprehensive easy to understand user friendly application software.

Features -Software:

- Program capable of text editing
- Data security in case of power failure
- Thermocouple break protection
- Repetition measurements with minimum parameter input
- Evaluation of current measurement
- Curve comparison up to 32 curves
- Storage and export of evaluations
- Export and import of data ASCII
- Data export to MS Excel
- Multi-methods analysis (DSC TG, TMA, DIL, etc.)
- Zoom function
- 1st and 2nd derivation
- Programmable gas control
- Statistical evaluation package
- Automatic axis re-scaling



DIL Features:

- Rate Controlled Sintering (RCS) software
- Interchangeable Thermocouples for various atmospheres
- Sinter process evaluation
- Glass transition and softening point evaluation
- Softening point determination and system shut down
- Linear thermal expansion evaluation
- Several system correction features
- Automatic zero point adjustment
- Auto-scheduler for up to 16 uninterrupted runs

Options:

- Automatic gas control
- Closed loop water cooler
- Water bath thermostat
- Gas humidity generator
- Two stage Rotary pump (10E-3 mbar)
- Turbo molecular pump (10E-5 mbar)

Horizontal - Dilatometer Furnaces:

Temperature	Type	Element	Atmosphere	TC-Type
-150 – 500°C	L75/264	Thermo coax	inert, oxid., red., vac.	Type K
RT – 1000°C	L75/220	Kanthal	inert, oxid., red., vac.	Type K
RT – 1400°C	L75/230	Kanthal	inert, oxid., red., vac.	Type S
RT – 1600°C	L75/240	SiC	inert, oxid., red., vac.	Type S
RT – 2000°C	L75/260	Graphite	inert, red., vac.	Type C

Vertical - Dilatometer Furnaces:

Temperature	Type	Element	Atmosphere	TC-Type
-150 – 500°C	L75/264	Thermo coax	inert, oxid., red., vac.	Type K
RT – 1000°C	L75/220	Kanthal	inert, oxid., red., vac.	Type K
RT – 1400°C	L75/230	Kanthal	inert, oxid., red., vac.	Type S
RT – 1600°C	L75/240	SiC	inert, oxid., red., vac.	Type S
RT – 1750°C	L75/250	Pyrox/MoSi2	inert, oxid., red., vac.	Type B
RT – 2000°C	L75/260	Graphite	inert, red., vac.	Type C
RT – 2400°C	L75/270	Graphite	N2/Vac.	Pyrometer

Model	L 75 Horizontal	L 75 Vertical
Temperature Range	L75H X LT (-150 – 500°C) L75H X 1000°C L75H X 1400°C L75H X 1600°C L75H X 2000°C -	L75V X LT (-150 – 500°C) L75V X 1000°C L75V X 1400°C L75V X 1600°C L75V X 1750°C L75V X 2000°C L75V X 2400°C

X = S = single Dilatometer
X = D = double Dilatometer

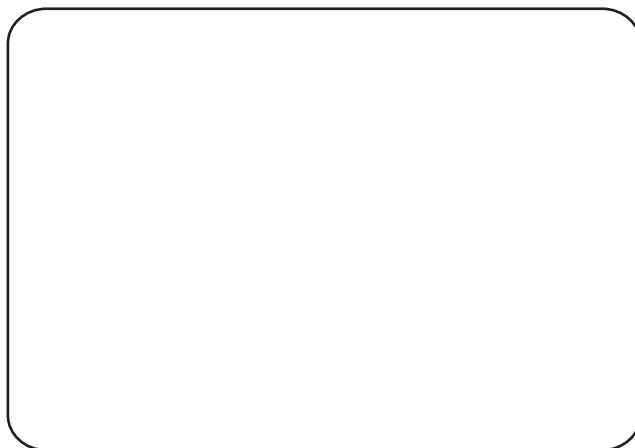
Technical Data:

• Temperature range	-150°C up to +2400°C
• Sample length	up to 50 mm
• Sample Ø	7 or 12 mm
• Measuring range	100 µm up to 5000 µm
• Resolution	0,125 nm/digit
• Gas	possible
• Vacuum	10E-5 mbar
• Automatic pressure	0 - 100 cN
• Calibrations standards	Al2O3, Sapphire, etc.

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