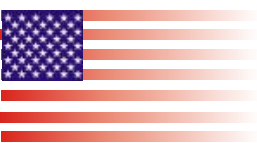




**DSC PC 1600**



thermal analysis  
with **out** limits



*LINEAR*

TA

Differential Scanning Calorimetry, DSC, is well-known as a fast and easy-to-operate thermo analytical measuring technique according to industrial standards such as ISO, ASTM, DIN, ... for research & development, quality management, failure analysis, and process optimization.

### Heat Flux DSC

A technique in which the temperature of the sample unit, formed by a sample and reference material, is varied in a specified program and the temperature difference between the sample and the reference material is measured as a function of temperature.

Many industrial standards provide a guideline of how to calibrate the equipment for specific material-, product- and characteristic-referred applications, result evaluation and interpretation.



**The DSC measurement principle is used typically for:**

- Research & Development
- Quality control
- Quality assurance
- Process optimization
- Error analysis

**The main user groups of Differential Scanning Calorimetry (DSC) are:**

- Powder Metallurgy
- High tech materials
- Ceramics
- And many more ...

## The following characteristics can be determined by DSC measurements:

- Enthalpy, melting energy
- Specific heat
- Glass point
- Crystallinity
- Reaction enthalpy
- Thermal stability
- Oxidation stability
- Aging
- Purity
- Phase transformation
- Solidus / liquidus - relationship
- Eutecticum
- Polymorphs
- Product identification

## LINSEIS DSC PT1600 (Cp)

### Features

- Temperature range -170°C up to +1750°C
- Different easy exchangeable furnaces
- Different easy exchangeable sensors
- Low temperature model with LN2 cooling or with Intercooler

The **DSC PT1600** was developed to specifically for the high – as well as low temperature range (-170 up to 1750°C).

For this broad temperature range a number of different exchangeable furnaces is available. Furthermore emphasis was placed on a stable baseline and high reproducibility.

Due to its unique features the DSC PT1600 is an indispensable tool for quality control and R&D.

The Instrument can be equipped with a number of different exchangeable furnaces, different measuring systems and numerous different crucibles. Measurements under vacuum, inert, reduced and oxidized atmospheres are possible.

The vacuum tight construction (10E-5 mbar) allows quantitative measurements under cleanest gas atmospheres.

## Measuring system

User-friendly exchangeable measuring systems such as DTA, as well as different DSC sensors (Type E, K, S, B) are available for the DSC PT1600. This allows the perfect choice for any application or atmosphere.

## Options

- LN2 cooling system
- Turbo molecular pump (10E-5 mbar)
- Two stage rotary pump (10E-3 mbar)
- Different protection tubes
- Coupling with MS/FTIR

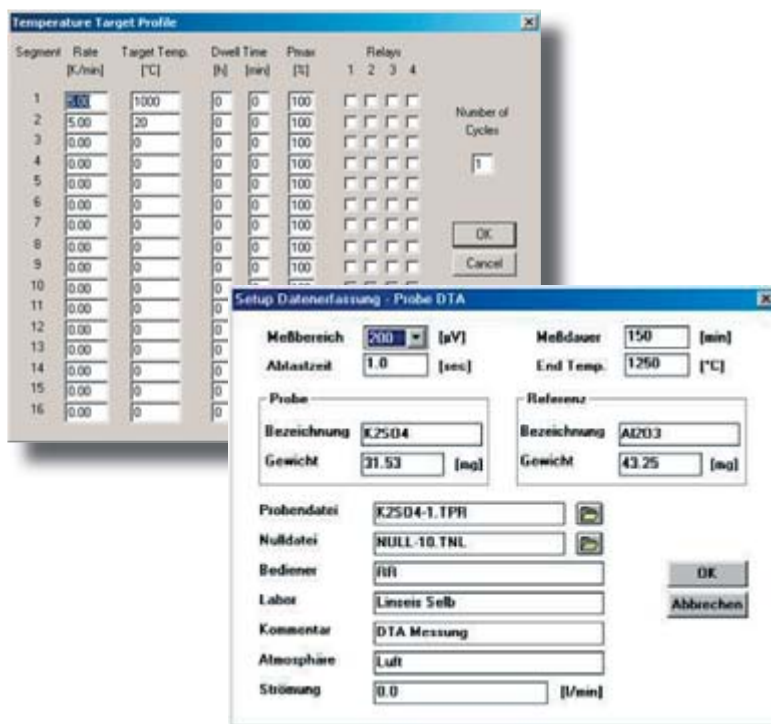
## Software

All thermo analytical devices of LINSEIS 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 Linseis 32 – bit software encounters all essential features for measurement preparation, execution and evaluation with a DSC run, just like with other thermo analytical experiments.

Due to our specialists and application experts LINSEIS was able to develop this easy understandable and highly practical software.



## Features

- Program capable of text editing
- Repetition measurements with minimum parameter input
- Evaluation of current measurement
- Curve comparison up to 32 curves
- Curve subtraction
- Multi-methods analysis (DSC TG, TMA, DIL, etc.)
- Zoom function
- 1. and 2. Derivative
- Complex peak evaluation
- Multipoint calibration for sample temperature
- Multipoint calibration for change of enthalpy
- Cp calibration for heat flow
- Storage and export of evaluations
- Export and import of data ASCII
- Data export to MS Excel
- Signal-steered measuring procedures

## LINSEIS accessories

The versatility of the LINSEIS DSC is supported by the large selection of crucibles. Select for your application and samples the ideal crucible material, the best form and kind of sealing.

Crucibles made of metal; precious metal, graphite and oxide ceramics are available in different dimensions.

Aluminum crucibles can be sealed gas-tight in a handy locking press, so that samples can be protected from the influence of the Environment atmosphere and that gas splitting off from the samples is suppressed.

## Specifications LINSEIS DSC systems

Temperature range	-170 ...1750°C*
Heating/Cooling rates	0,1 up to 50°C/min
Temperature accuracy	+/-0,5°C (substance calibration)
Time constant	7 s
Resolution	0,3, 0.4, 1µW**
RMS Noise	4, 6, 17.5µW**
Data acquisition rate	0,1 s up to 3600 s / data point
Atmospheres	N2, Argon, O2 etc., reducing and oxidizing
Measuring range	+/-250 ...+/-5000mW

\*Different Furnaces

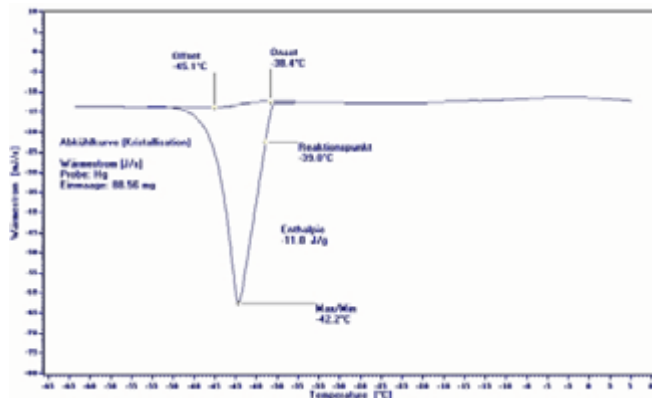
\*\*Different Sensors

Calibrations material included

Calibration: recommended 6 month interval

## Application examples for the HDSC

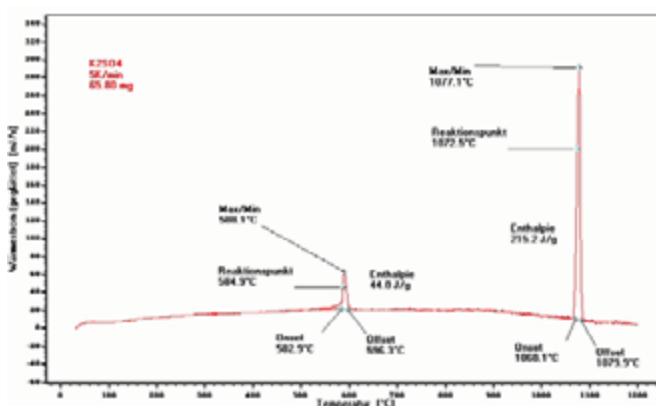
Picture 1, measurement of silversulfat



### Silversulfat (AG2SO4)

Silversulfat (AG2SO4) changes its crystalline structure from a orthorhombic configuration to a hexagonal system at 424°C. The energy that is needed for this crystalline restructuring can be very good determined by means of the HDSC method (high temperature differential scanning calorimetry).

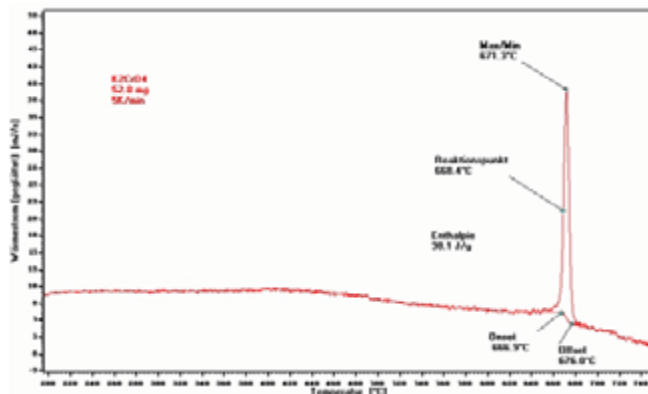
Picture 2, measurement of potassium sulfat



### Temperature of potassium sulfat (K2SO4)

Potassium sulfat (K2SO4) is changing its crystal structure from a orthorhombic to a hexagonal system at 582°C. The energy that is needed for this restructuring can be determined with the HDSC method quantitatively (high temperature differential scanning calorimetry).

Picture 3, measurement of caliumchromat



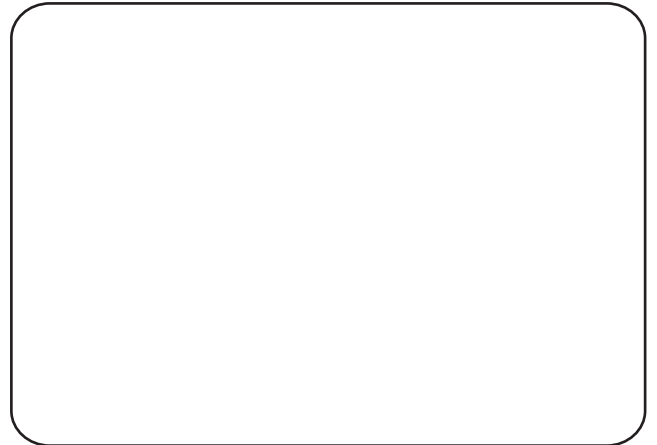
### Caliumchromat (K<sub>2</sub>CrO<sub>4</sub>)

The crystalline structure of K2CrO4 changes from a orthorhombic to a hexagonal structure at 665°C. This endothermal phase change can be evaluated by means of HDSC, relative to temperature, as well as relative to the energy, that is needed for the phase change.

[www.linseis.com](http://www.linseis.com)

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