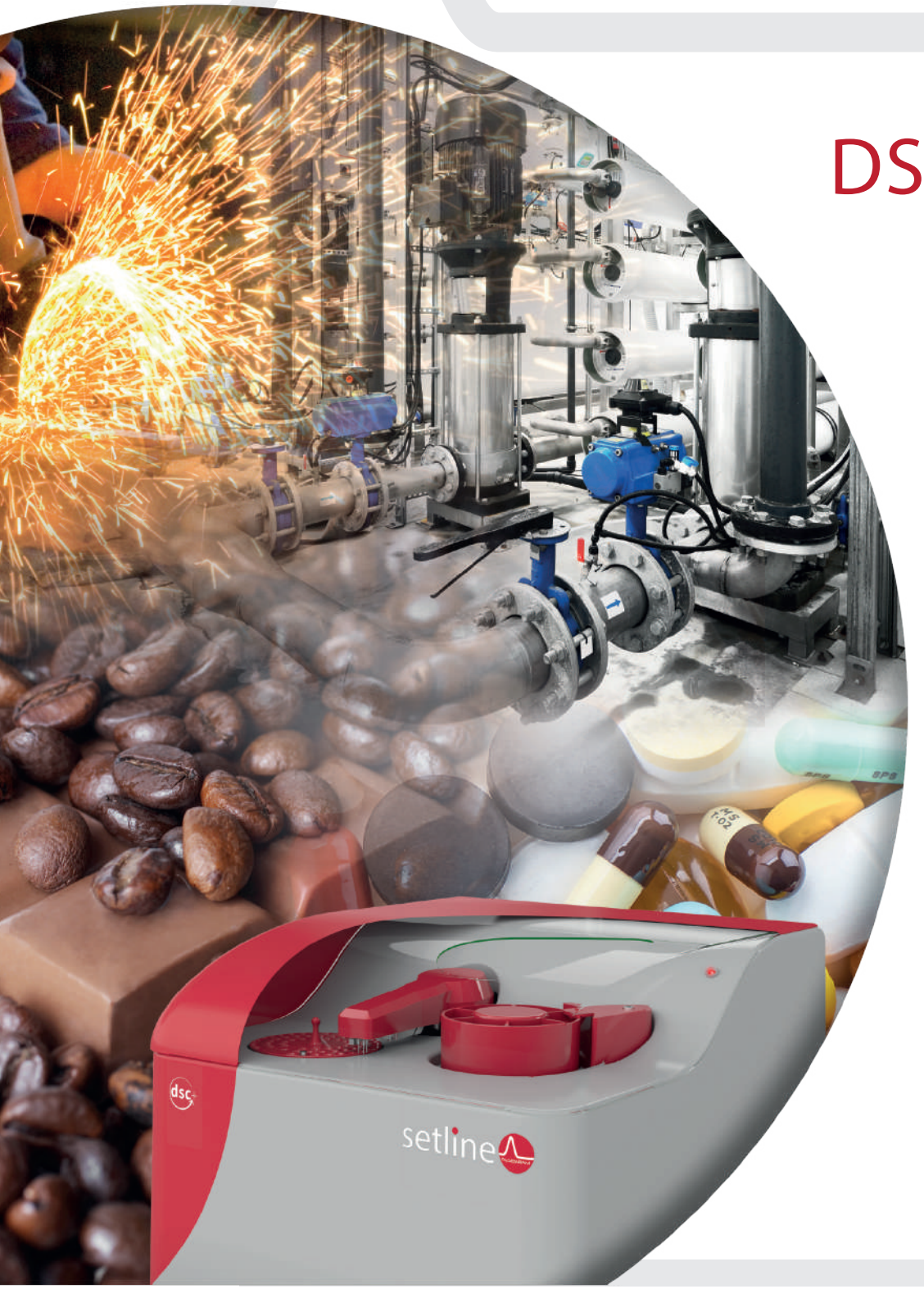
setline

simple. powerful

by SETARAM



DSC / DSC+

Setline® by Setaram

Setaram has inspired material scientists for over 70 years with a range of high quality material characterization instruments for even the most challenging experimental conditions.
Now Setline® brings Setaram's thermal analysis expertise to quality control with a range of instruments designed to meet the most important QC needs and applications.

SIMPLE

Setline® is easy to use and easy to own.

EASY TO USE

- Setline® DSC / DSC+ is easy to use across diverse QC fields.
- Setline's® robust DSC sensor technology ensures quality, consistent and reliable data.
- Setline's® compact design is robust and space efficient for all laboratories.
- Setline's® DSC + automates repetitive testing saving significant time.
- Low downtime due to 59 position auto-sampler, fast heat up and cool down.

EASY TO OWN

- Setline® is built for durability in high use situations.
- Cost of ownership is lowered through simplified maintenance for minimized down time and a Replacement Parts Guarantee*.
- Setline's® Technical and Application support ensures fast, expert help on any question.
- Calisto 2.0 exclusive software ensures intuitive and easy data handling.

*See local guidelines for details

Thermal Analysis and Quality Control

Manufacturers need to meet the increasing demand for pro duct quality and performance.

Product materials and manufacturing processes can both be monitored using thermal analysis to ensure optimal product quality and productivity. It's application within quality control is therefore both broad and numerous and includes polymer, pharmaceutical, cement, steel, battery, textile, carbon and catalyst manufacture to name a few.

With diverse industries and their commercial needs in mind, Setline's® thermal analysis instruments are designed for **simplicity** and **power**

"During my PhD studies I had to use three different programs to collect and analyze the calorimetric data, and to show graphically the results. Calisto combines all the steps from accurate peak integration to heat capacity determination to even analyze data from other types of equipment."

Dr Kristina Lilova
PhD in Materials Science /Solid State Chemistry
UC Davis, USA

Setline® by Setaram DSC and DSC+

POWERFUL

Calisto is designed to treat any Thermal Analysis data from any instrument or brand, works on any Setaram instrument and consists of two independent parts:

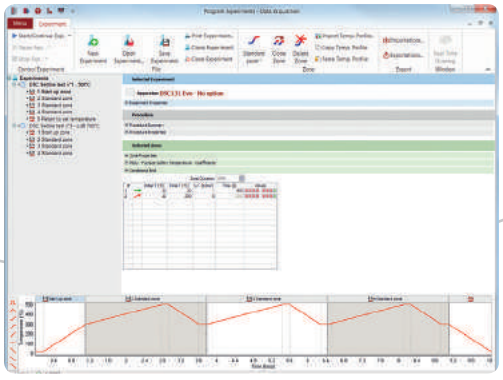
- **CALISTO ACQUISITION** is dedicated to the control and data acquisition of **SETLINE® DSC.** It includes the intuitive set-up of experiment procedures that can be saved and reapplied to multiple samples later.

- **CALISTO PROCESSING** is designed for **SETLINE® DSC** data treatment and includes:
  - Powerful peak processing (integration, baseline choice, temperature, deconvolution/peak separation etc)
  - Data integrity features with user rights management options, data modification traceability, secured access etc
  - Automated data processing adapted to your needs with user-recorded macros
  - Options to present data with the maximum impact
  - Direct export to graphical or spreadsheet formats

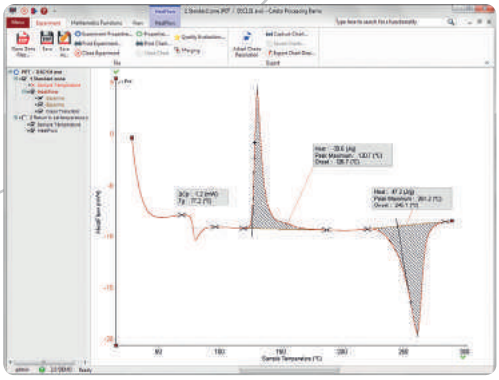
See calisto-software.com for more information on the power of Calisto 2.0 software.

Calisto 2.0 Exclusive Software

With quick to install Calisto software Setline's® DSC and DSC+ are not only **Simple**, they are **Powerful** too.



CALISTO DATA ACQUISITION



CALISTO DATA PROCESSING

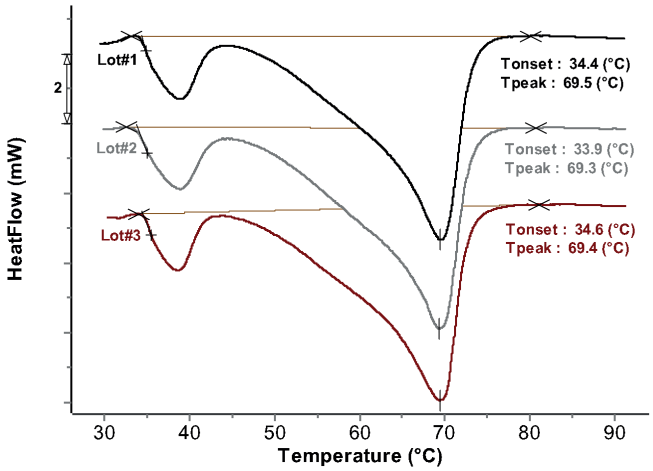
Applications

The combination of **simplicity** and **power** of Setline® DSC and DSC+ make them the ideal instruments for intensive use in material quality control testing. Most QC laboratories manage multiple material characterization methods incompatible with complex, user intensive technology and instrument downtime. The robustness and high testing throughput of the DSC+ auto-sampler combined with Calisto's fast and simple data treatment, powered by user-recorded macros, are ideal for QC labs.

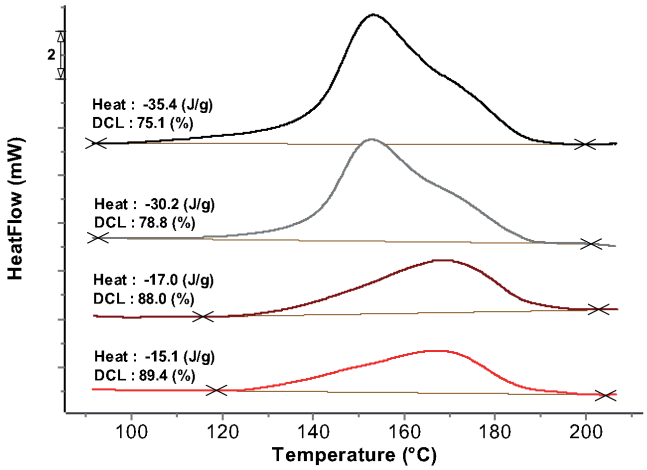
Setline® instruments are designed for the most common DSC measurements in industry including:

- Temperatures and enthalpies of melting and crystallization
- Glass transition temperatures of polymers
- Heat of curing / degree of curing of polymers
- Oxygen Induction Time of polymers
- Purity of chemicals using the Van't Hoff method
- Material decomposition and thermal stability

Just two of many common data representations using Calisto 2.0 software:



Melting profiles of 3 different lots of the same cosmetic ingredient (lipstick). Determination of the start (onset) and end (peak) temperatures of melting.

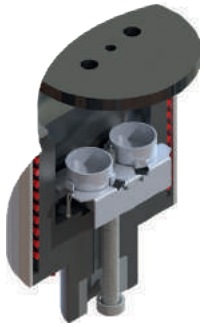


Determination of the degree of crosslinking (DCL) of ethylene-vinyl acetate (EVA) copolymer films after lamination. EVA films are meant to be used as encapsulants for photovoltaic applications. The heat of the residual curing reaction is measured and divided by the heat of reaction of an uncured sample to calculate DCL. The lots tested show various DCL results.

For more information, a free DSC Basics and Practical Exercise workbook and an extensive application library please refer to:

www.setaramsolutions.com

Features



SETLINE® TRANSDUCER

SENSOR

The Setline® transducer is made from chromel-constantan and uses plate-shaped DSC rod technology ensuring high sensitivity over the full temperature range (-170 °C to 700 °C). It is housed in a small volume, resistor furnace with low thermal inertia. This enables high heating and cooling rates for the multiple, high speed experiments for quality control laboratories.

The furnace temperature is extremely uniform, ensuring high quality data and accurate sample temperature measurement of thermal events.

CRUCIBLES

We provide Regular and High Pressure crucibles.
• Regular Alumina and Aluminium (30 and 100 µl) crucibles ensure good thermal transfer between sample and sensor.
• For Setline DSC and DSC+ : Stainless Steel (30 µl) crucibles and Gold plated (30 µl) crucibles up to 200 bar and 400 °C provide High Pressure capability while being inert to most sample types.
• For Setline DSC : High Pressure Incoloy (30 µl) crucibles deliver unmatched high pressure capability up to 500 bar, 600 °C.

SUB-AMBIENT COOLING OF THE SETLINE® DSC AND DSC+

There are three types of sub-ambient cooling devices:

- **Liquid Nitrogen (LN2) Manual cooling accessory for DSC operating from -170 to 400 °C**
- **Liquid Nitrogen (LN2) Automated cooling accessory for DSC and DSC+ operating from -150 to 400 °C****
- **A cryothermostat cooling device for intermediate temperature ranges for DSC and DSC+****:**
  -60°C* to 200°C under a flow of Helium
  -50°C to 400°C under a flow of Argon, Nitrogen or dry Air

Specifications

	SETLINE® DSC	SETLINE® DSC+
Temperature range (°C)	-170 to 700	-170* to 700
Programmable heating rate (°C/min)	0.01 to 100	0.01 to 100
Cooling time	12 min from 500 °C to 100 °C (air) 12 min from 25 °C to -100 °C (LN_2) 5 min from 100 °C to 0 °C (cryothermostat)	12 min from 500 °C to 100 °C (air) 12 min from 25 °C to -100 °C (LN_2) 5 min from 100 °C to 0 °C (cryothermostat)
Enthalpy accuracy / precision* (%)**	+/- 0.8 / 2.5	
Temperature accuracy / precision* (°C)**	+/- 0.30/ 0.50	
DSC measurement range (mW)	+/- 6 000	
Atmosphere	Inert gas, air (possible gas switch between 2 gases)	
Gas flow range (ml/min)	10 to 100	
Autosampler	-	59 positions (samples or references)
Height - Width - Depth (mm) / (in)	320 - 380 - 500 / 12.6 - 15 - 19.7	365 (825 open) - 455 - 510 / 14.4 (32.5 open) -17.9 - 20
Power requirements	230V - 50/60Hz	230V - 50/60Hz

***Lower temperatures can be achieved. The time to reach these minimum temperatures can be over two hours; **When sub-ambient cooling devices are used, the autosampler cannot operate; ***Based on indium melting tests**

Setline® by Setaram. Unusually Simple. Surprisingly Powerful.

setline by SETARAM
simple. powerful

Switzerland – France – China – United States – India – Hong Kong

For contact details: **www.setaramsolutions.com or setaram@kep-technologies.com**

KEP Technologies
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