

Features

DSC SENSOR

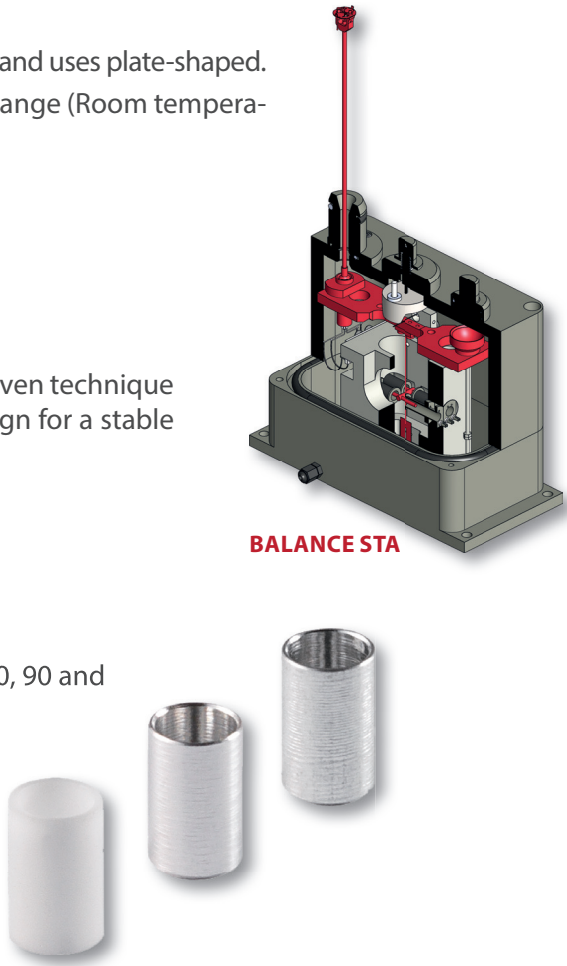
The DSC transducer of the Setline® STA / STA⁺ is made from platinum alloys and uses plate-shaped. DSC rod technology ensuring high sensitivity over the full temperature range (Room temperature to **1 100 °C**).

BALANCE

The balance used to measure sample mass variations is based on the proven technique of a beam articulated around a torsion band, the most appropriate design for a stable and robust system. It guarantees reliable and sensitive measurements.

CRUCIBLES

We provide finest quality aluminium, alumina and platinum crucibles (80, 90 and 100µl respectively).



Specifications

	SETLINE® STA	SETLINE® STA ⁺
Temperature range (°C)	RT* to 1 100	
Programmable heating rate (°C/min)	0.01 to 50	
Cooling time	45 min from 1 100 °C to 70 °C (air)	
Atmosphere	Inert (N ₂ , Ar, He...) or oxidative (Air, O ₂ ...)	
Gas flow range (ml/min)	10 to 100	
Mass variation range (mg)	+/- 1 000	
Mass variation resolution (µg)	0.2	
DSC rod resolution (µW)	2.5	
Autosampler	-	51 positions (samples or references)
Maximum dimensions Height - Width - Depth (mm) / (in)	600 (closed) or 800 (open) - 400 - 500 / 23.6 (closed) or 31.5 (open) - 15.7 - 19.7	600 (closed) or 800 (open) - 500 - 650 / 23.6 (closed) or 31.5 (open) - 19.7 - 25.6
Power requirements	230V - 50/60Hz	

*Room Temperature / **Based on Indium melting tests

Setline® by Setaram. Unusually Simple. Surprisingly Powerful.

simple. powerful

STA / STA⁺

simple. powerful

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

For contact details: www.setaram.com or sales@setaram.com

A registered trademark of KEP Technologies Group

www.kep-technologies.com



pirana.net • Specifications are given as indications only and are not contractual • 07/18

Setline® by Setaram

Setaram has inspired material scientists for over 60 years with a range of high quality material characterisation instruments for even the most challenging experimental conditions.

Now Setline brings Setaram's thermal analysis expertise to academia with a range of instruments designed to meet the most important educational needs and applications ranging from the acquisition of thermal analysis skills through to basic research.

sta



SIMPLE

Setline® is easy to use and easy to own

EASY TO USE

- Setline® is easy to use across diverse academic fields
- Setline's® compact design is robust and space efficient for all laboratories
- Options focussed around core needs ensures ease of use and quicker mastery
- Setline's® robot (STA⁺) automates sample handling across multiple experiments

EASY TO OWN

- Setline® is built for durability in continual usage environments.
- Cost of ownership is lowered through simplified maintenance and a Replacement Parts Guarantee*
- Setline's® Technical and Application support ensures fast, expert help on any question

*See local guidelines for details

Thermal Analysis and Academia

Thermal analysis has applications in many academic fields including but not limited to Material Science, Metallurgy, Polymer and Physical Chemistry, Chemical Energy, Engineering, Geoscience, Pharmacy and Food Science. This diversity highlights the variety of institutes and students who use thermal analysis instruments and often on a continual basis. The early popularity of Setline DSC / DSC⁺ systems sees the range now extend into STA / STA⁺ systems. STA, or Simultaneous Thermal Analysis enables the coupling of Thermo Gravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC) for simultaneous measurement of mass variations and heat flow.

With educational needs in mind, Setline® 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 STA and STA⁺

POWERFUL

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

- **CALISTO ACQUISITION** is dedicated to the control and data acquisition of **SETLINE® STA/STA⁺**. It includes the intuitive set-up of experiment procedures for all conditions and parameters.
- **CALISTO PROCESSING** is designed for **SETLINE® STA/STA⁺** data treatment and includes:
 - Powerful thermal effect processing (single and multiple mass changes, residual mass, DTG, blank subtraction, DSC peak integration, etc)
 - Options to present data with the maximum impact
 - Direct export to graphical or spreadsheet formats

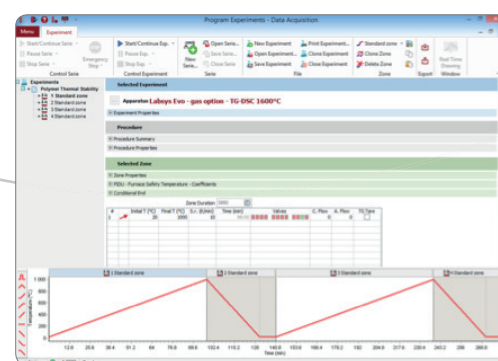
See calisto-software.com for more information on the power of Calisto 2.0 software.



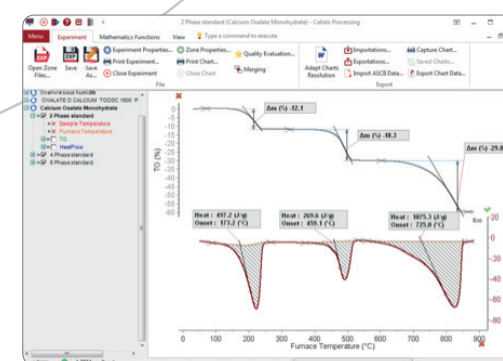
sta+

Calisto 2.0 Exclusive Software

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



CALISTO DATA ACQUISITION



CALISTO DATA PROCESSING

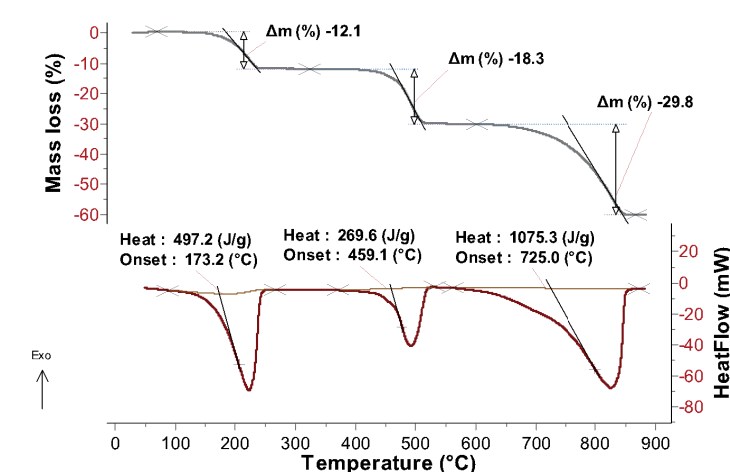
Applications

The combination of **simplicity** and **power** of SETLINE® STA and STA⁺ make them the ideal instruments for a first experience in thermal analysis. With Education in mind, they were designed for the most common applications in industry and research, so offer the best preparation for students' future activities.

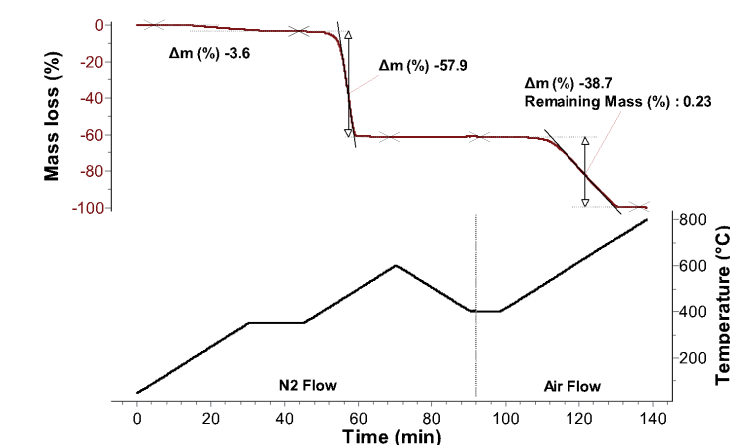
With SETLINE® STA and STA⁺ the main available measurements include:

- Thermal stability, ageing, and decomposition pathway of most materials:
 - Polymers, elastomers, pharmaceuticals, biomaterials, organic substances like coal, oils, lubricants
- Study of thermal effects like:
 - Pyrolysis, combustion
 - Desorption
 - Dehydration, dehydroxylation
- Compositional analysis:
 - Ashes, carbon, fillers, additives' contents
 - Moisture, solvent contents

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



Mass loss (TG) and Heatflow (DSC) traces of a calcium oxalate monohydrate ($\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$) sample. From lower to higher temperatures: dehydration, formation of calcium carbonate, and formation of calcium oxide. This rather simple example highlights the quantitative aspect of thermogravimetry measurements. This demonstrates to students the capacity of the STA method both to identify steps in the thermal decomposition of materials, and to detect endo or exothermic effects.



Analysis of the composition of a synthetic rubber. The sample is heated in two steps up to 600°C under inert gas flow (nitrogen) and cooled down to 400°C. The gas flow is changed to air and the sample is heated up to 800°C. The three mass losses observed correspond to the decompositions of the plasticizer, oil and wax content (3.6%), the elastomer content (57.9%) and the carbon black content (38.7%). The remaining mass at the end of the experiment corresponds to the ash content of the rubber, but is insignificant (<0.5%) in the present example.

For more information and a free STA Basics and Practical Exercise workbook report visit: setline.setaram.com

An extensive application library can also be referenced on www.setaram.com

Features

DSC SENSOR

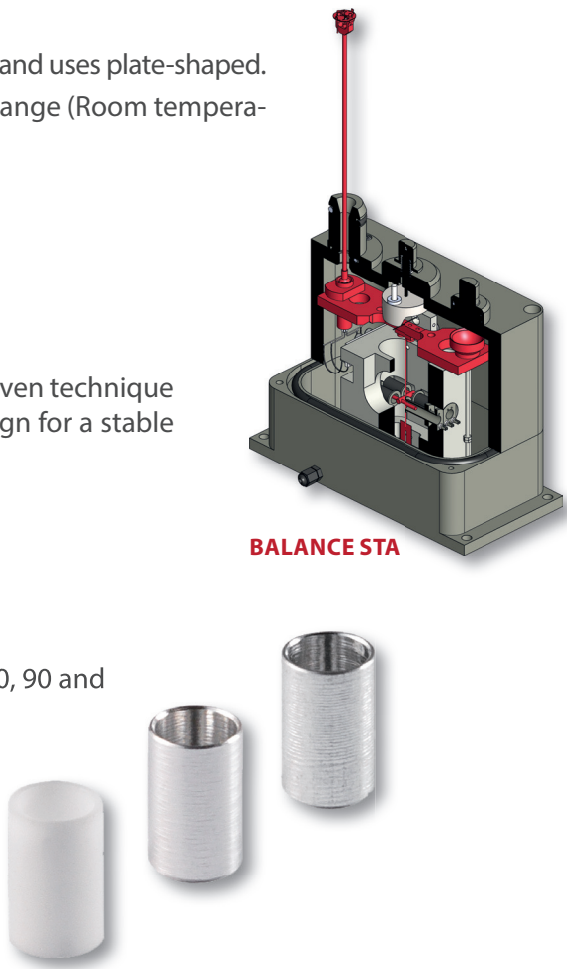
The DSC transducer of the Setline® STA / STA⁺ is made from platinum alloys and uses plate-shaped. DSC rod technology ensuring high sensitivity over the full temperature range (Room temperature to **1 100 °C**).

BALANCE

The balance used to measure sample mass variations is based on the proven technique of a beam articulated around a torsion band, the most appropriate design for a stable and robust system. It guarantees reliable and sensitive measurements.

CRUCIBLES

We provide finest quality aluminium, alumina and platinum crucibles (80, 90 and 100µl respectively).



Specifications

	SETLINE® STA	SETLINE® STA ⁺
Temperature range (°C)	RT* to 1 100	
Programmable heating rate (°C/min)	0.01 to 50	
Cooling time	45 min from 1 100 °C to 70 °C (air)	
Atmosphere	Inert (N ₂ , Ar, He...) or oxidative (Air, O ₂ ...)	
Gas flow range (ml/min)	10 to 100	
Mass variation range (mg)	+/- 1 000	
Mass variation resolution (µg)	0.2	
DSC rod resolution (µW)	2.5	
Autosampler	-	51 positions (samples or references)
Maximum dimensions Height - Width - Depth (mm) / (in)	600 (closed) or 800 (open) - 400 - 500 / 23.6 (closed) or 31.5 (open) - 15.7 - 19.7	600 (closed) or 800 (open) - 500 - 650 / 23.6 (closed) or 31.5 (open) - 19.7 - 25.6
Power requirements	230V - 50/60Hz	

*Room Temperature / **Based on Indium melting tests

STA / STA⁺

Setline® by Setaram. Unusually Simple. Surprisingly Powerful.

SETARAM Instrumentation
Switzerland – France – China – United States – India – Hong Kong
For contact details: www.setaram.com or sales@setaram.com



A registered trademark of KEP Technologies Group

www.kep-technologies.com



pirana.net • Specifications are given as indications only and are not contractual • 07/18

Setline® by Setaram

Setaram has inspired material scientists for over 60 years with a range of high quality material characterisation 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® STA / STA⁺ is easy to use across diverse QC fields
- Setline's® robust balance and DSC sensor technology ensures quality, consistent and reliable data
- Setline's® compact design is robust and space efficient for all laboratories
- Setline's® STA⁺ automates repetitive testing saving significant time
- High uptime due to 66 position auto-sampler, fast heat up and cool down

EASY TO OWN

- Setline® is built for durability in intensive usage 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 handling

*See local guidelines for details

Thermal Analysis and Quality Control

Manufacturers need to meet the increasing demand for product 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. The early popularity of Setline DSC / DSC⁺ systems, sees the range now extend into STA / STA⁺ systems. STA, or Simultaneous Thermal Analysis enables the coupling of Thermo Gravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC) for simultaneous measurement of mass variations and heat flow.

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 STA and STA⁺

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® STA/STA⁺**. It includes the intuitive set-up of experiment procedures that can be saved and reapplied to multiple samples later.

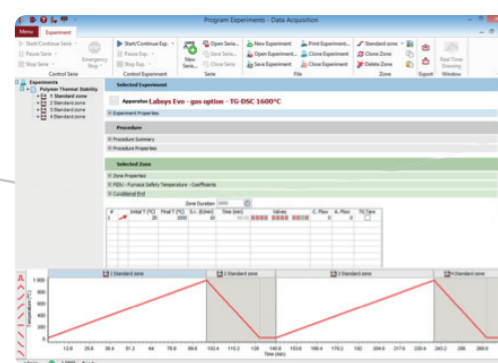
- **CALISTO PROCESSING** is designed for **SETLINE® STA/STA⁺** data treatment and includes:
 - Powerful thermal effect processing (single and multiple mass changes, residual mass, DTG, blank subtraction, DSC peak integration, etc)
 - Data integrity features with user rights management options, data modification 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.

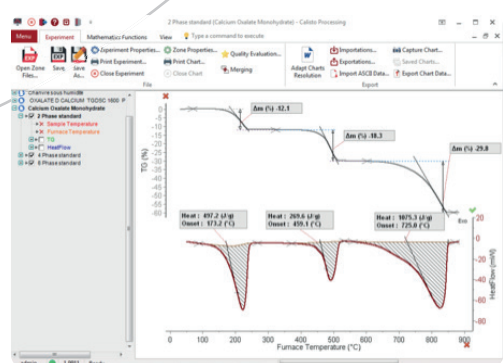


Calisto 2.0 Exclusive Software

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



CALISTO DATA ACQUISITION



CALISTO DATA PROCESSING

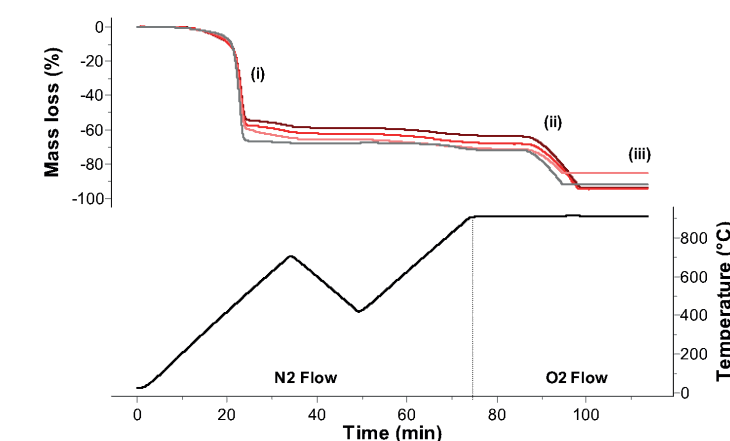
Applications

The combination of **simplicity** and **power** of SETLINE® STA and STA⁺ make them the ideal instruments for intensive use in material quality and 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 STA⁺ auto-sampler combined with Calisto's fast and simple data treatment powered by user-recorded macros are ideal for QC labs.

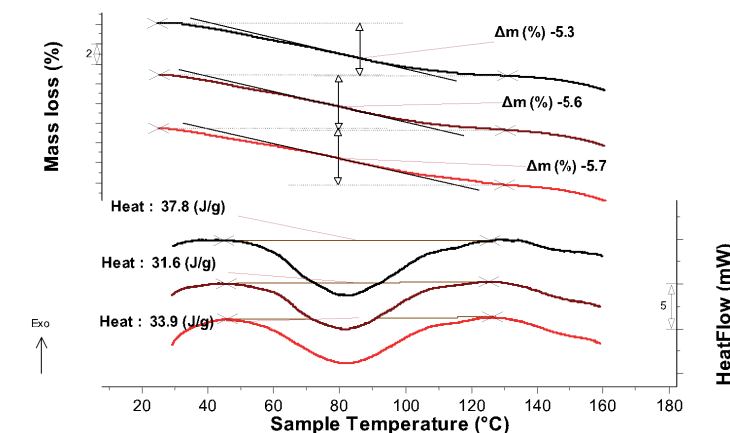
Setline® instruments are designed for the most common STA measurements in industry including:

- Thermal stability, ageing, and decomposition pathway of most materials
 - Polymers, elastomers, pharmaceuticals, biomaterials, organic substances like coal, oils, lubricants...
- Compositional analysis:
 - Ashes, carbon, fillers, additives' contents
 - Moisture, solvent contents
- Study of thermal effects like:
 - Pyrolysis, combustion
 - Desorption
 - Dehydration, dehydroxylation

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



Analysis of the composition of rubber samples of various qualities. The samples are heated in two steps up to 700°C under inert gas flow (nitrogen), cooled down to 400°C and heated back up to 900°C. The gas flow is changed to air at 900°C. The two mass losses observed correspond to the decompositions of the plasticizer and elastomer (i) and the carbon black (ii). The remaining mass at the end of the experiment corresponds to the ash content of the rubber (iii). For the tested lots, (i) varies between 57.7 and 67.7%, (ii) between 4.5 and 5.8%, and (iii) between 19.9 and 29.6%. The 12 mass losses can be treated automatically thanks to a pre-recorded macro.



Determination of the free water content of three different lots of a pharmaceutical material using the mass variation signal. The endothermic Heatflow signal enables the identification of the temperature range of the free water release. The mass losses and endothermic peaks can be treated automatically thanks to a pre-recorded macro.

For more information and a free STA Basics and Practical Exercise workbook report visit: setline.setaram.com

An extensive application library can also be referenced on www.setaram.com