Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>SETLINE® STA</th>
<th>SETLINE® STA+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range (°C)</td>
<td>RT* to 1 100</td>
<td></td>
</tr>
<tr>
<td>Programmable heating rate (°C/min)</td>
<td>0.01 to 50</td>
<td></td>
</tr>
<tr>
<td>Cooling time</td>
<td>45 min from 1 100 °C to 70 °C (air)</td>
<td></td>
</tr>
<tr>
<td>Atmosphere</td>
<td>Inert (N₂, Ar, He…), or oxidative (Air, O₂…)</td>
<td></td>
</tr>
<tr>
<td>Gas flow range (ml/min)</td>
<td>10 to 100</td>
<td></td>
</tr>
<tr>
<td>Mass variation range (mg)</td>
<td>± 1 000</td>
<td></td>
</tr>
<tr>
<td>Mass variation resolution (µg)</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>DSC rod resolution (µW)</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Autosampler</td>
<td>51 positions</td>
<td></td>
</tr>
<tr>
<td>Maximum dimensions (mm / in)</td>
<td>600 (closed) or 800 (open) / 700 / 23.6 (closed) or 31.5 (open) / 15.7 / 19.2</td>
<td>650 (closed) or 800 (open) / 700 / 23.6 (closed) or 31.5 (open) / 19.7 / 25.6</td>
</tr>
<tr>
<td>Power requirements</td>
<td>230V - 50/60Hz</td>
<td></td>
</tr>
</tbody>
</table>

*Room Temperature / **Based on Indium melting test

Features

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).

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 STA

Dr Kristina Lilova
UC Davis, USA

PhD in Materials Science /Solid State Chemistry

“During my PhD studies I had to use three different programs to collect and process data. With Calisto software, I can show graphically the results and also conduct the analysis through the intuitive and easy handling of the software.”

Manufacturers need to meet the increasing demands for product quality and performance. Product materials and manufacturing processes can both be monitored using thermal analysis to ensure optimal product quality and productivity. Its application within quality control is therefore both broad and numerous and includes polymer, pharmaceutical, cement, steel, battery, textile, carbon and metal manufacturers.

Thermal Analysis and Quality Control

EASY TO USE
• Setline® is easy to use and easy to own
• Setline® easy to use across diverse QC fields
• Setline® robust balance and DSC sensor technology ensures quality, consistent and reliable data.
• Setline® compact design, robust and space efficient for laboratories

EASY TO OWN
• Setline® is built for durability in intensive usage situations
• Setline® is easy to use

DATA INTEGRITY FEATURES
• Data integrity features with user rights management options, data modification traceability, secured access etc
• Residual mass, DTG, blank subtraction, DSC peak integration, etc
• Automated data processing adapted to your needs with user-recorded macros

MATERIAL CHARACTERISATION
• Automatic data processing adapted to your needs with user-recorded macros.  Setline® instruments are designed for the most common STA measurements in industry including:
  - Moisture, solvent contents
  - Thermal stability, ageing, and decomposition pathway of most materials

CALISTO DATA ACQUISITION
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's® STA/STA+.
  - CALISTO PROCESSING is designed for SETLINE® STA/STA+ data treatment and analysis.  Powerful thermal effect processing (single and multiple mass changes, residual mass, DTG, blank subtraction, DSC peak integration, etc)
  - Data integration of technical and application support ensures fast, expert help on any question
  - Calisto 2.0 Exclusive Software is not only intuitive and easy handling

With quick to install Calisto software Setline's® STA and STA+ are not only simple they are powerful too.

EFFECTIVE JOINT USE
- Thermo Gravimetric Analysis (TGA)
- DSC ( Differential Scanning Calorimetry)

COST OF OWNERSHIP
- Cost of ownership is lowered through simplified maintenance for Setline® instruments

PRODUCTIVITY
- Setline® is designed to treat the composition of rubber samples of various qualities. The samples are heated in two steps up to 70°C under inert gas flow (nitrogen), cooled down to 40°C and treated back up to 100°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 (c).

Characterization of the rubber is determined through: (i) peaks can be treated automatically thanks to a pre-recorded macro.

DETERMINATION OF THE FREE WATER CONTENT OF THREE DIFFERENT RUBBER SAMPLES

Data integrity features with user rights management options, data modification traceability, secured access etc

Analysis of the composition of rubber samples of various qualities. The samples are heated in two steps up to 70°C under inert gas flow (nitrogen), cooled down to 40°C and treated back up to 100°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 (c).

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 the web site www.setaram.com

The combination of simplicity and power of SETLINE® STA and STA+ makes them the ideal instruments for iterative use in material quality and control testing. Most QC laboratories manage multiple material characterization methods incompatible with some current instrumentation and maintenance 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 is ideal for QC labs.

Analysis of the composition of rubber samples of various qualities. The samples are heated in two steps up to 70°C under inert gas flow (nitrogen), cooled down to 40°C and treated back up to 100°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 (c).

For the tested tests, (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 split into (i) 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 split into 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.

www.setaram.com

Applications

- Thermal stability, aging, and decomposition pathway of most materials
- Polymers, elastomers, pharmaceuticals, biomaterials, organic substances like coal, oils, lubricants...
- Compositional analysis:
  - Ashes, carbon, fibers, additives' contents
- Monitoring and control
- Study of thermal effects like:
  - Pyrolysis, combustion
  - Decoration
  - Dehydration, dehydrationlation

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