

HUMAN HEALTH

ENVIRONMENTAL HEALTH

SMALL SIZE  
BIG POTENTIAL



**STA 6000 / 8000**  
Simultaneous Thermal Analyzers

**JCANO**  
INGENIERÍA DE MÉXICO®  
Equipo de Laboratorio, Mantenimiento, Capacitación y CRM personalizado

**PerkinElmer**  
*For the Better*

## SIMULTANEOUS THERMAL ANALYZERS



## THE POWER OF THERMAL

Catering to your every need, PerkinElmer® brings you twice the thermal capability in one compact instrument.

The PerkinElmer range of Simultaneous Thermal Analyzers (STA), offers you real-time measurement and analysis of sample weight change and heat flow. With innovative sensor technology and compact furnace design, our STA instruments are ideally suited for both research and routine applications. So whether your application is characterizing inorganics, analyzing polymers or testing oils, combining differential temperature analysis (DTA or DSC) with proven thermo-gravimetric (TGA) technology, you are assured of reliable results and simple data interpretation.



The STA range for polymer analysis

### Compact not compromised

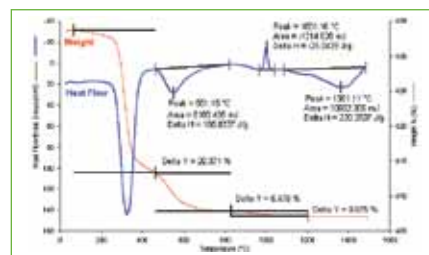
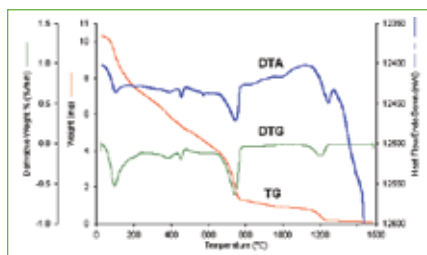
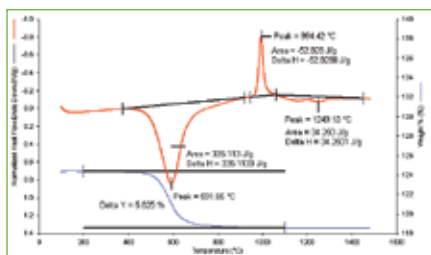
Our small footprint STA instruments deliver you all the performance you need. The compact furnace gives you improved temperature control, fast cool-down time, and precise measurements. And for increased productivity, the easy-to-load vertical STA 6000 system can be equipped with an autosampler.

Since 1960, PerkinElmer has been at the forefront of high precision, high sensitivity thermal analysis. With instrument options, specialized software, and OneSource® service support, we offer a reliable solution for thermal analysis laboratories all around the world.

# CONTROL THE HEAT

The PerkinElmer Simultaneous Thermal Analyzers deliver high productivity with reliable performance from routine to research applications. The STA 6000 is equipped with our leading edge SaTurnA™ sensor technology which measures both sample and reference temperatures to ensure high precision and accuracy. Combined with the proven compact furnace, they deliver precise temperature control with fast heat-up, cool-down and rapid stabilization.

Operating from as low as 15 °C, the STA instruments offer a wide range of analytical operating temperatures, to capture complete moisture and solvent evaporation. With two models to choose from, the STA 6000 and STA 8000, you can select the optimum STA even for high temperature applications.



From left to right: Thermal analysis of Ceramic Clay, Concrete and Geological Bauxite

## High performance, high productivity

Designed with the busy laboratory in mind, the STA family of analyzers has an easy-to-load vertical sample system. With integrated mass flow controllers, automatic gas control and gas switching, accurate environmental control is easy. The STA 6000 can be equipped with a fully-integrated autosampler. The unique split-carousel design means you can prepare and load samples at the bench, before loading them into the instrument.

With simultaneous analysis of thermo gravimetric analysis, TGA, with differential thermal analysis, DTA mode, or differential scanning calorimetry, DSC (mW) mode, the STA enables fast, enhanced results interpretation from a single sample run. And with a small footprint the PerkinElmer STA ensures you can make optimal use of your valuable laboratory space.

# THERMAL FLEXIBILITY



With the power to acquire both TGA and DTA/DSC measurements simultaneously, the compact, small instrument delivers high performance thermal analysis across the widest range of applications.

From compositional analysis to kinetic studies the STA 6000 is a real laboratory workhorse, with the STA 8000 enabling high temperature thermal analysis for fuel cell, ceramics, catalysis applications and challenging academic research.

## From TGA...

- Compositional analysis – quantitative content analysis
- Decomposition temperatures
- Engine oil volatility measurements (TGA Noack test)
- Filler content
- Flammability studies
- Lifetime predictions (via TGA kinetics software)
- Measurement of volatiles (e.g. water, oil)
- Oxidative stabilities
- Thermal stabilities
- Catalyst and coking studies
- Hyphenation to identify outgassing products

## ...to DTA / DSC

- Melting/crystallization behavior
- Glass transition temperatures
- Specific heat capacity
- Kinetic studies
- Transition and reaction enthalpies

# POWER OF CHOICE

PerkinElmer has the system to give you the complete picture, whatever your application.

## Ceramic materials

Porcelain clay is used to make a wide range of commercial products, from household sinks to fine ceramic art. Besides water, clay is composed of natural components including kaolin, feldspar and silica, plus low percentage additives. The final ratio of these components results in a range of processing characteristics and material appearance factors. To get the final product required, mixtures can be quantified by combining weight loss data and heat

flow. STA 8000 can quantify the moisture content and kaolin content through the weight change. The heat flow signal can quantify the amounts of the reaction/crystallization product that determines the structure of the finished product.



## Construction materials

Inorganic cement is used for a range of applications under a range of conditions. The strength and durability of the bond depends on the initial mixture and the setting conditions. STA 8000 is ideally suited to characterize the mix of hydrate and carbonate products produced from the setting process. In the 1960s, high alumina cement was inappropriately used in high humidity areas leading to, for example, the catastrophic collapse of a ceiling over a swimming pool.

DTA and TGA were successfully used for concrete testing that could be used to assess the safety of other structures. STA technology can perform this type of analysis more rapidly and with the added security of both weight loss and heat flow data analysis.

## Geological materials

DTA and TGA have long been used to characterize ores and other materials of geologic interest. With STA analysis, the two pieces of information are obtained at the same time from the same sample. This means there is no opportunity to misconstrue the process taking place. Many natural inorganic compounds lose water from hydrates and/or carbon dioxide from carbonates as they are heated, and almost all undergo chemical reactions as they are heated in an oxidizing or



reducing atmosphere. With STA, these reactions can be clearly characterized by the heat emitted or absorbed and by weight changes.

# PROGRAMMED FOR SUCCESS

The PerkinElmer STA family of products operates under powerful Pyris® software control.

Tailored to the needs of your analysis, very stable specific gas flow rates can be maintained and for methods where gas switching is needed during the analysis, the Pyris software takes control.

The software controlled mass flow controllers can handle reactive gases and enables you to program a fast purge-out of residual oxygen or a quick oxidizing furnace clean at the end of the run, all in keeping with good laboratory practice (GLP). And for pharmaceutical applications, Pyris software has a 21 CFR 11 option.

Whatever your analytical requirements the STA 6000/8000, with built-in mass flow controller, both monitors and controls the selected purge flow rates. And for complete peace of mind, if your gas supply runs low, the Pyris® software will alert you on-screen.



## Complete integration

Taking control of thermal analysis in a busy laboratory couldn't be easier.

For continuous operation, create a Play List in Pyris Player. The software automatically monitors the temperature of the low-mass furnace and loads your next sample as soon as the STA 6000 is ready.

Whether you are an experienced scientist or new to thermal analysis, with Pyris software and robust STA technology you can now run your samples quickly and easily, achieving reliable results every time.

# DESIGNED FOR YOU

With a vast array of thermal applications, you can rely on PerkinElmer to offer the latest in reliable, well-engineered technology to provide a solution to suit you. With a choice of temperature ranges and modular systems, we believe in supplying you the instrument that best meets your needs.

## Thermal performance plus

As a world leader in developing cutting-edge analytical techniques, PerkinElmer understands how to combine the power of thermal analysis, with the specificity of separation, and the sensitivity of detection.

Interpreting data can often be simplified using hyphenated systems and PerkinElmer offers a wide choice of analytical techniques that can be combined with the STA 6000/8000. With expertise in individual analytical techniques, PerkinElmer seamlessly interfaces your PerkinElmer STA to a PerkinElmer infrared, IR, or PerkinElmer mass spectrometer, MS, or GC/MS. Additional interfaces are available to connect laboratory equipment from other manufacturers to your PerkinElmer STA. All systems are fully supported by our global service network, ensuring trust and confidence in their performance.

## STA-MS

Combining STA with mass spectrometry opens up a whole world of opportunities, creating the ideal tool for quality control, testing, new product development and R&D. Very low levels of evolved gases can be detected. This real-time, highly sensitive analysis makes STA-MS ideal for detecting residual solvents in pharmaceuticals, measuring additives in polymers and many more applications.



## STA-IR

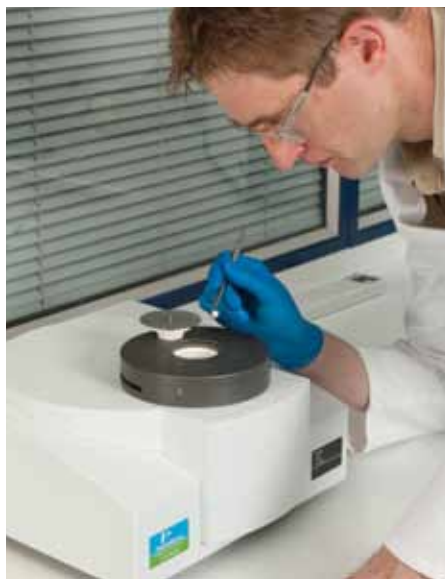
The power of infrared spectrometry combined with STA is a well-established technique for materials characterization and the most common form of EGA (evolved gas analysis). With detection levels suitable for even low levels of impurities, STA-IR embodies PerkinElmer's many years of experience in infrared spectroscopy and thermal analysis, delivering better performance and more reliable results.

## STA-IR GC/MS

Both STA-IR and STA-MS have limitations and by combining multiple instruments into one system, these can be minimized. Adding a GCMS to an STA-IR system allows the detection of very small levels of impurities and increases the detection limits.

# PERKINELMER — THE POWER OF THERMAL

# OUR EXPERTISE AT YOUR SERVICE



With more than 50 years' experience in thermal analysis – no one understands the applications better than we do. With 2000 highly qualified service engineers present across more than 150 countries, you can trust our network of support to keep your instruments up and running.

Our service extends to all your laboratory equipment from any manufacturer. Covering maintenance, validation and qualification, and backed by a complete range of training, technical support and certification, our services can be tailored to the specific needs of your laboratory.



For more information, visit [www.perkinelmer.com/sta8000](http://www.perkinelmer.com/sta8000)

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