



ThermCon Scientific GmbH



Simultaneous Thermal Analyzer STA 1250/1600

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Simultaneous Thermal Analyzer

STA 1250 /1600

The working principle of a simultaneous thermal analyzer (STA) is based on program-controlled temperature variation to measure the change in mass of a substance with respect to temperature or time. Its main components include a heating furnace, balance, temperature controller, and recording system.

The STA operates based on the processes of heat conduction, absorption, and radiation as the sample temperature changes. By precisely controlling the furnace temperature, the instrument can heat, cool, or maintain the sample at a constant temperature, while simultaneously detecting and recording changes in temperature and the corresponding physical and chemical properties of the sample.

Application Fields

The simultaneous thermal analyzer can simultaneously detect TG and DSC signals over a wide range, including:

- Thermal stability
- Oxidation and reduction behavior
- Decomposition behavior
- Corrosiveness studies
- Decomposition kinetics
- Melting and crystallization
- Solid-phase transitions
- Degree of crystallinity
- Glass transition

It is widely used in research and development, process optimization, and quality control in fields such as plastics, rubber, coatings, pharmaceuticals, catalysts, inorganic materials, metals, and composite materials.



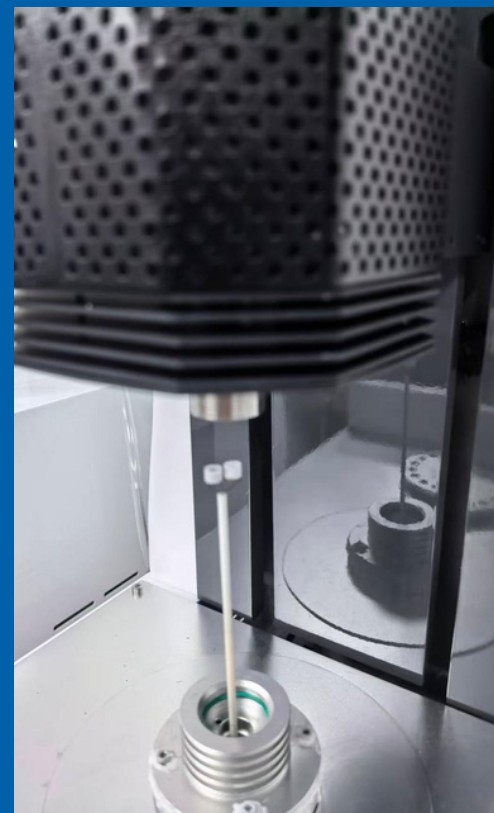
Accuracy in every measurement, reliability in every device.

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Structural Advantages

- 1. The furnace heating adopts high-temperature alloy wire in a dual-coil configuration, reducing interference and improving high-temperature resistance.
- 2. The pan sensor is made of precious metal alloy wire, offering high-temperature resistance, oxidation resistance, and corrosion resistance.
- 3. The power supply, circulating cooling system, and main unit are separated to reduce the effect of heat and vibration on the microbalance.
- 4. The main unit design isolates the furnace body from the chassis and microbalance to minimize thermal influence.
- 5. The furnace body uses dual insulation for improved linearity, is equipped with an automatic lifting system for rapid cooling, and includes an exhaust port for connection to infrared and other systems.



Controller and Software Advantages

1. Uses imported ARM processor for faster sampling and data processing.
2. Four-channel AD acquisition system collects TG and temperature (T) signals.
3. Heating control employs a PID algorithm for precise temperature regulation, allowing multi-segment heating and isothermal holding.
4. Software communicates bidirectionally with the instrument via USB, enabling full remote operation, parameter configuration, and start/stop control.
5. A 7-inch full-color 24-bit touchscreen provides a superior user interface. TG calibration can be performed directly on the touchscreen.

Compliance with Industry Standards

ASTM D 3386, ASTM D 696, ASTM E831-2019, ASTM E831-06, ASTM E831-2014, DIN 51045-3-2009, GB/T 33047.3-2021, GB/T 4498.2-2017, GB/T 32868-2016, GB/T 31984-2015, GB/T 14837.2-2014, GB/T 29189-2012, etc.

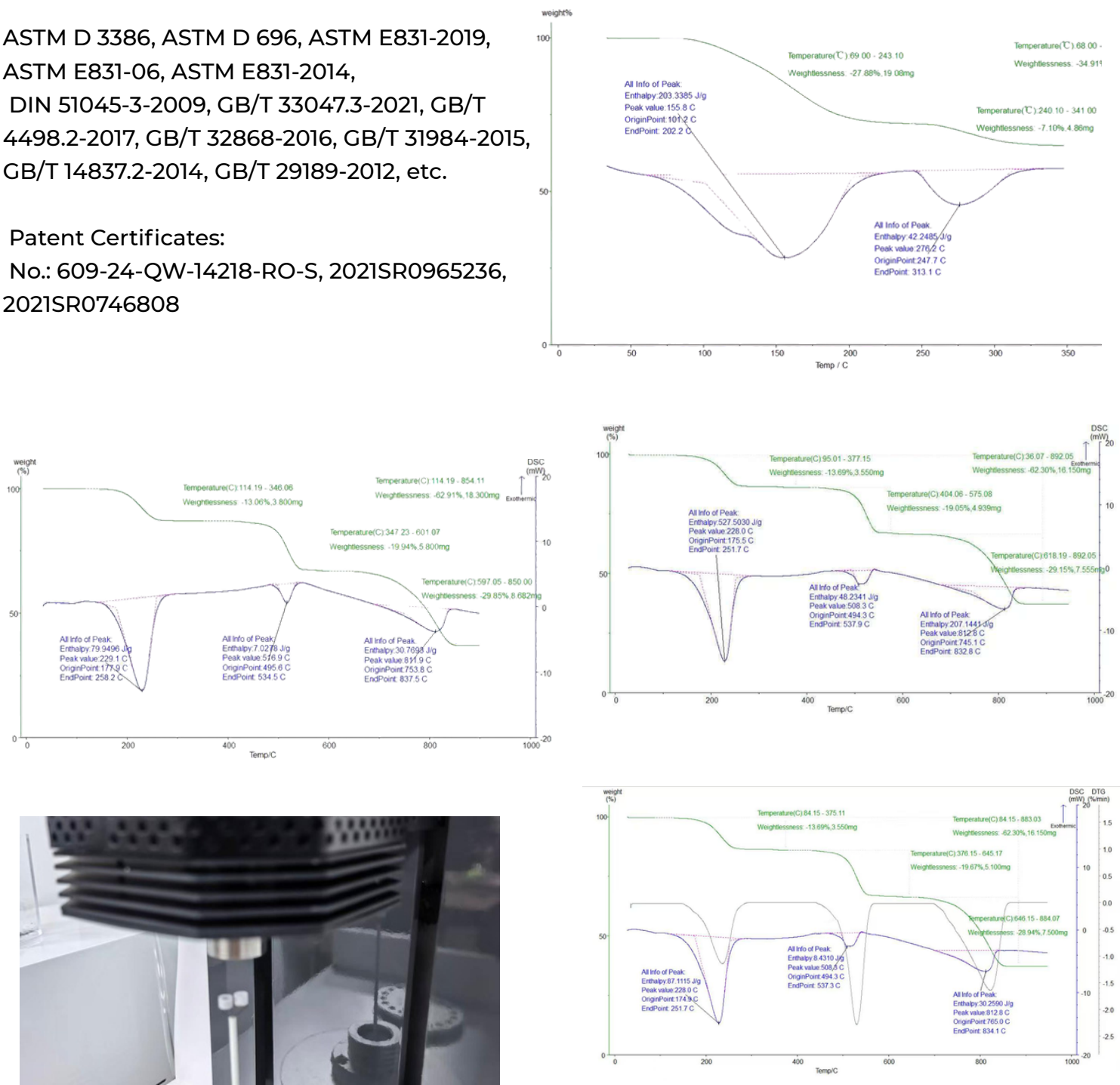
Patent Certificates:

No.: 609-24-QW-14218-RO-S, 2021SR0965236, 2021SR0746808

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Application Examples

Test Spectrum : CuSO₄·5H₂O, CaC₂O₄·H₂O



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Technical Specifications

Temperature range	Room temperature – 1250 °C /1550 °C
Temperature Resolution	0.01 °C
Temperature Fluctuation	±0.1 °C
Temperature Control Method:	PID control (heating, cooling, isothermal)
Heating Rate :	0.1 – 100 °C/min
Weighing System Range:	0.01 mg – 3 g (expandable to 50 g)
Accuracy :	1 µg
Resolution :	0.1 µg
DSC Range :	±1000 mW
DSC Sensitivity :	0.01 mW
Atmosphere Control :	Built-in dual gas flowmeters with dual-gas switching and flow rate control
Software Functions:	Automatic TG curve recording and data processing; TG/DTG, mass, and percentage coordinate switching; auto-extension and scaling.
Isothermal Time :	Arbitrary setting; standard configuration ≤ 600 min
Data Acquisition Frequency :	Real-time, 2 s, 5 s, 10 s selectable
External Cooling :	Water-cooling unit (–10 °C to 60 °C) to reduce thermal drift
Furnace Lifting Modes :	Automatic and manual; rapid cooling ≤ 30 min from 1000 °C to 50 °C