

STA-3403

Synchronous Thermal Analyzer



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

The working principle of simultaneous thermal analysis instrument (TGA-DSC) is based on programmed temperature control to measure the relationship between mass of substances and temperature or time. Its main components include heating furnace, balance, temperature controller and recording system.

Operational Principle:

Based on the temperature change of the sample and the process of heat conduction, absorption, radiation, etc. It controls the temperature of the furnace to heat, cool and maintain the temperature of the sample, and then detects and records the temperature change of the sample and the corresponding physical and chemical properties.

Heating process: The sample is placed in a crucible within the heating furnace and is heated or cooled at a predetermined rate through a programmed temperature control system. During this process, the sample undergoes a series of physical and chemical changes such as moisture evaporation, organic decomposition, phase transitions, etc., which can lead to a decrease in the sample's mass.

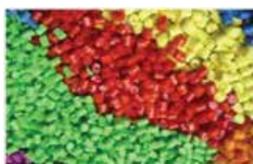
Quality monitoring: The quality change of the sample is measured and recorded by the high precision balance in real time. The balance collects and transmits the quality change to the host computer in real time, and finally displays the relationship between the quality and temperature or time in the form of curve.

Data recording and analysis: The thermal stability, phase transition temperature, decomposition temperature and other characteristics of the sample can be analyzed by the quality change curve recorded by the recording system.

Application area:

The simultaneous thermal analysis instrument (TG-DSC) can detect both tg/dsc information at the same time, and can measure a wide range of information, including: thermal stability, oxidation reduction, decomposition behavior, corrosion study, decomposition kinetics analysis, melting/crystallization, solid phase transition, crystallinity, glass transition, etc.

Thermal conductivity analysis instrument (TG-DSC) is widely used in the research and development, process optimization and quality control of plastics, rubber, coatings, pharmaceuticals, catalysts, inorganic materials, metal materials and composites.



Plastic materials



metal material



medicine



paint

Structural advantages:

1. Furnace heating: the double-row winding structure of precious metal platinum-rhodium alloy wire is adopted to effectively reduce electromagnetic interference and have better high temperature resistance.
2. Tray sensor: precision processing of precious metal alloy wire, with high temperature resistance, oxidation resistance and corrosion resistance.
3. Power supply and heat dissipation: The power supply system and circulating heat dissipation module are set independently of the host, effectively isolating heat and vibration interference, and ensuring the measurement accuracy of the microthermometer.
4. Heat insulation of the host: The heat insulation design of the host effectively isolates the conduction effect of the high temperature of the furnace body on the chassis and the micro thermometer.
5. Furnace function: Double insulation structure is adopted to achieve higher linearity of temperature distribution; automatic lifting function is provided to quickly cool down and improve operation safety; exhaust gas outlet is set up to support the connection with infrared spectrometer and other equipment to realize online gas analysis.

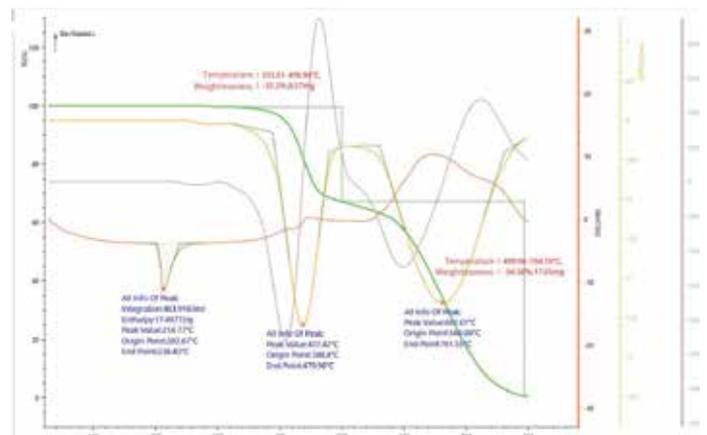
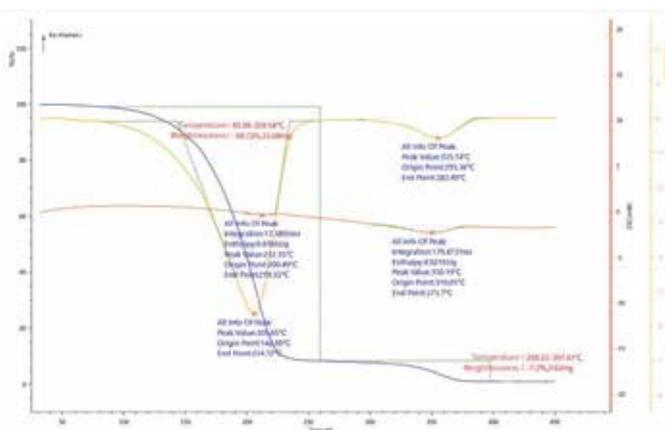
Advantages of controller and software:

1. The imported ARM processor is used to achieve faster sampling speed and processing speed.
2. The four-channel sampling AD collects the TG signal and temperature T signal.
3. Heating control, using PID algorithm for accurate control. It can be heated in multiple stages and kept at constant temperature (calcium oxalate repeatability test)
4. The software and the instrument use two-way USB communication to realize remote operation completely, and the instrument parameters can be set and the operation stopped through computer software.
5. 7-inch full-color 24-bit touch screen for a better human-machine interface. All calibration of TG can be achieved on the touch screen

Precautions:

temperature range	Room temperature-1550°C
temperature resolution	0.001°C
temperature fluctuation	±0.01°C
Heating/cooling rates	0.1~ 100°C/min°C-0.1~-40°C/min
Temperature control method	PID control, heating, cooling, constant temperature
Weighing system measurement range	0.001mg~3g, can be expanded to 10g
accuracy	1µg
sensitivity	0.1µg
DSC range	±1000mw
DSC sensitivity	0.1µw
Atmospheric control	Equipped with three gas mass flowmeters,including two for sample gas switching and one for furnace purge gas, with program control
software	The intelligent software can automatically record the TG curve for data processing, and can switch between TG/DTG/DDTG, quality, and percentage coordinates at will. The software has an automatic adjustment function, which can automatically extend and zoom according to the spectrum display.
Constant temperature time	Arbitrary setting; standard configuration ≤600min
The operating software has the corresponding copyright certificate, and the data test frequency can be selected as real time, 2S,5S, 10S, etc	
The furnace is equipped with automatic and manual lifting modes, which can cool down quickly; 1000°C to 50°C in 20 minutes or less	
External water cooling device, isolation of heat drift effect on weighing system; temperature range-10~60°C	

Test graph:



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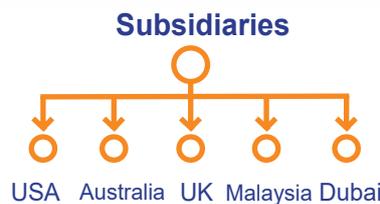
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HPLC Solutions	MultipleLabs	Infinite Multiplelabs LLP	Analytical Bio-Med	Analytical Foundation (Trust)
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Corporate & Regd. Office:
Analytical House, # E67 & E68,
Ravi Park, Vasna Road, Baroda,
Gujarat 390 015. INDIA

T: +91 265 2253620
+91 265 2252839
+91 265 2252370
F: +91 265 2254395

E :- info@analyticalgroup.net
info@hplctechnologies.com
info@multiplelabs.com

W:- www.analyticalgroup.net
www.hplctechnologies.com
www.multiplelabs.com

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