sisco

High Temperature Differential Scanning Calorimeter

（Thermogravimetric analyzer，Synchronous thermal analyzer）

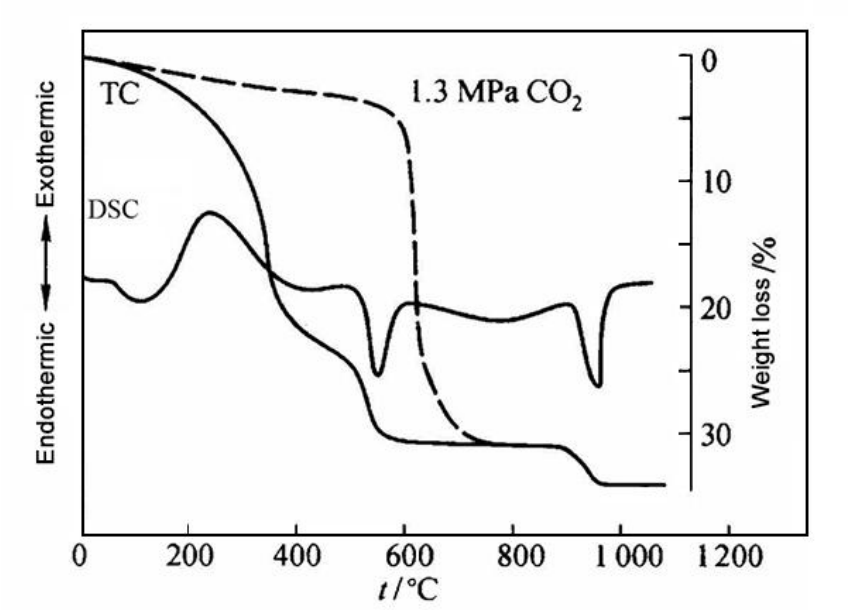
Introduction:

Synchronous thermal analysis combines thermogravimetric analysis (**TG**) with differential thermal analysis (**DTA**) or differential scanning calorimeter (**DSC**). In the same measurement, the information of **TG** and **DTA** or **DSC** can be obtained simultaneously using the same sample.

Thermogravimetric analysis (**TG**, **TGA**) is to observe the change of sample mass with temperature or time during the process of heating, constant temperature or cooling, with the purpose of studying the thermal stability and composition of materials. It is widely used in research and development, process optimization and quality control in various fields such as plastics, rubber, coatings, pharmaceuticals, catalysts, inorganic materials, metal materials and composite materials. The following characteristics of materials are measured and studied: thermal stability, decomposition process, adsorption and desorption, oxidation and reduction, quantitative analysis of components, influence of additives and fillers, moisture and volatiles, reaction kinetics.

DSC is a method of measuring the functional relationship between the temperature difference between the sample and the reference material and the temperature or time under the same heating conditions.

The experimental principle is to put the sample and the reference material into the crucible and heat them at a set rate. During the heating process, the sample will volatilize, decompose, and change in weight. The software records the relationship between weight and time/temperature.
The figure below shows the relationship between the sample's thermogravimetric analysis (**TGA**), thermal enthalpy change (**DSC**), time, and temperature.



Technical controller and software advantages:

1. An imported ARM processor is used, with faster sampling and processing speed.
2. Four-way sampling AD collects TG signal and temperature T signal.
3. Heating control uses PID algorithm for precise control. It can be multi-stage heating and constant temperature.
4. USB bidirectional communication is used between software and instrument to fully realize remote operation. The instrument parameters can be set and the operation of the instrument can be stopped through computer software.
5. 7-inch full-color 24-bit touch screen, better human-machine interface. TG calibration can be realized on the touch screen.

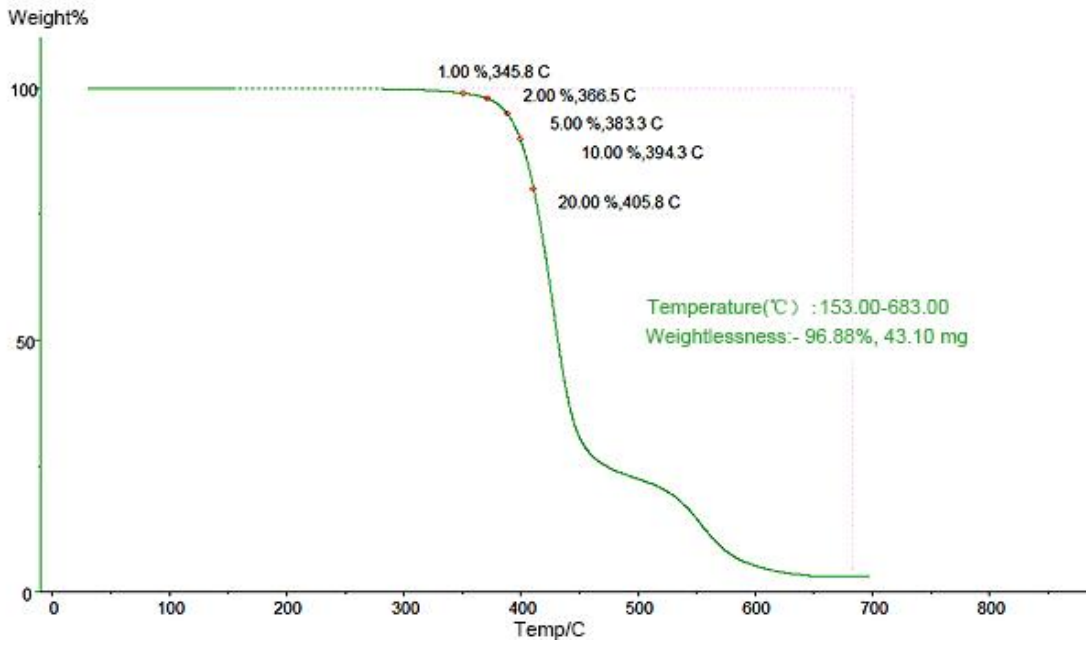
Structural advantages:

1. The furnace body heating adopts customized nickel-chromium wire double-row winding to reduce interference and is more resistant to high temperature.
2. The tray sensor is made of alloy wire and has the advantages of high temperature resistance, oxidation resistance, and corrosion resistance.
3. The power supply, circulating heat dissipation part and the host are separated to reduce the influence of heat and vibration on the micro-thermal balance.
4. The upper cover structure is adopted for easy operation. It is difficult to move the furnace body to place the sample, which is easy to cause damage to the sample rod.
5. The host adopts the heat isolation heating furnace body to the chassis and the micro-thermal balance.
6. In terms of temperature control, we use PID temperature control, and many of our peers use relay on-off temperature control. The PID temperature control heating linearity will be better, which can meet the heating, constant temperature, and cooling control, with cooling scanning; many peers do not have cooling scanning
7. The lower computer has temperature multi-point correction, which can be quickly corrected with one key, without the need to operate on the computer side, and the correction is more convenient and accurate.

Control software:

The controller and software are specially developed and designed for thermogravimetric analyzers. The software is compatible with the current Windows operating system and is constantly updated with Windows systems. It uses a standard database to manage test data, and performs real-time control, detection, data processing, result display, curve drawing, and print output reports on experimental parameters.

Test Spectrum



Equipment technical parameters:

1. Temperature range: room temperature-1550℃
2. Temperature resolution: 0.01℃
3. Temperature fluctuation: ±0.1℃
4. Heating rate: 0.1~100℃/min
5. Temperature control method: PID algorithm control, heating, constant temperature, cooling
6. Program control: program setting of multiple sections of heating and constant temperature
7. Balance measurement range: 0.01mg~200mg, customizable to 50g
8. Accuracy: 0.01mg
9. DSC range: 0~±1500mW (expandable)
10. DSC sensitivity: 0.01mw
11. Constant temperature time: within 300 minutes
12. Curve scanning: heating scan, constant temperature scan, cooling scan; multiple sections of heating and cooling programs can be set, up to 6 sections can be set
13. Display mode: Chinese characters large screen LCD display
14. Atmosphere device: Built-in gas flow meter, including two-way gas switching and flow control
15. Software: Intelligent software can automatically record TG curves for data processing and print experimental reports
16. Data interface: standard USB interface, dedicated software (software is upgraded for free from time to time)
17. Power supply: AC220V 50Hz

18. Appearance size: 500*400*430mm (length, width and height)
19. The software has a multi-point correction function, and high and low temperature tests are more accurate
20. The instrument has a fast cooling device, 1000~100℃, less than 30min

Standard equipment configuration

Synchronous thermal instrument 1 set
Software USB disk 1 piece
Experimental software 1 set
Communication data cables (USB data communication) 2 pieces
Power cord 1 piece
Ceramic crucibles 200 pieces
Ceramic lids 2 pieces
Metal lid 1 piece
10A fuses 5 pieces
Pure tin particles 1 bag
Sample spoon 1 piece
Sample pressure rod 1 piece
Tweezers 1 piece
Ear suction ball 1 piece
Counterweight 1 piece
Trachea 2 pieces