

## Cahn VersaTherm



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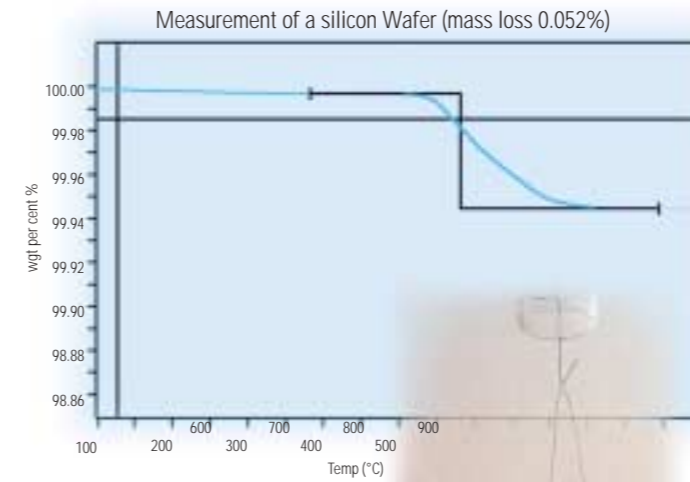
**Thermogravimetric Analysis**  
High Mass and High Volume

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# Thermogravimetric Analysis Cahn VersaTherm TGA



The Thermogravimetric Analysis (TGA) records the change in mass of a sample as it is subjected to a controlled temperature program. In most cases, the heating rate is kept constant. The sample remains freely suspended from the balance mechanism, which records the mass change due to chemical reactions produced as the temperature is increased progressively.



### High Sensitivity

The electromagnetic null-type balance invented by Dr. Cahn is the heart of the Cahn VersaTherm thermogravimetric analyzers. It provides a sensitivity of 0.1 µg and a wide dynamic range that makes it possible to measure trace components in highly pure materials.

### High Temperature

Corrosion studies or analysis of ceramic and metal powder injection molded parts often require high temperatures. The Cahn VersaTherm TGAs allow testing under temperatures of up to 1700 °C. This extreme temperature range combined with the other high end capabilities make them powerful instruments to solve difficult thermal analysis problems.



### Software

Data acquisition and data analysis are performed using the powerful Cahn Thermal Analyst™ software from Thermo Electron Corp. Compatible with Windows® NT, 2000 or XP, the software provides high flexibility and reliability.

Main features:

- Real time and continuous data display
- Data saved directly to hard drive for nearly endless runs
- Programmable control of gas flow rates, switching, and mixing
- Complete suite of powerful data analysis tools

### High Mass / High Volume

A critical issue in TGA is the ability to handle high mass and high volume samples. Sample mass is a crucial factor when analyzing non-homogeneous materials such as coal, minerals and catalysts. High volume is important when analyzing low density materials to maximize surface area exposure and to prevent spillover contamination during out-gassing.

Often complete parts like microchips and ball bearings must be measured and coatings must be analyzed using the entire coated part to improve accuracy to minimize sample preparation. The Cahn VersaTherm instruments from Thermo offer unique high mass capability of up to 100 g and high volume reactor tubes and sample containers of up to 35 ml to accommodate these "real world" samples. The high mass and high volume capability of the Cahn VersaTherm provides a tremendous advantage with non-homogeneous, low density, or irregularly shaped samples.



### Patented Synergy Interface for TGA - EGA coupling

Volatile components can be identified and quantified by coupling the Thermogravimetric Analyzer (TGA) to an Evolved Gas Analyzer (EGA). The most common couplings are TG-MS (Mass Spectrometry), TG-FTIR (Fourier Transform Infrared Spectroscopy). The patented Synergy interface uses large ID "sniffer" tube to guarantee maximum gas transfer with minimal clogging. The no-flow zone guarantees minimal off-gas mixing, and the "sniffer" tubes is positioned right

above the sample to provide an evolved concentrated gas effluent. The TG-FTIR or TG-MS combination from Thermo provides a signal that is up to eight times higher than conventional coupled systems. The Cahn Thermal Analyst™ software is completely integrated with the Nicolet Omnic™ FTIR software. The data is displayed in real time, and it requires one mouse click on the TGA curve to open the corresponding FTIR slice. The software can be used to control both systems from one keyboard.



The optional TG/FTIR software offers:

- Complete integration of data analysis and acquisition with the Nicolet Omnic™ FTIR software from Thermo
- Programmable external AC and contact closure for remote start of FTIR or Mass Spectrometer

### High Vacuum

The Cahn VersaTherm thermogravimetric analyzers can be evacuated down to 5 x 10<sup>-5</sup> torr using the optional vacuum accessory. This guarantees an oxygen free environment and fast purges.



### Corrosive or Reactive Gases

Corrosive or reactive gas environments including SO<sub>2</sub>, HCL, H<sub>2</sub>, CH<sub>4</sub>, O<sub>2</sub> and H<sub>2</sub>S can easily damage thermal analysis systems. Thermo TGA instruments are designed to handle the most aggressive sample environment by incorporating a unique patented gas flow separation system and gold plated balance mechanism for added protection.

Specificationsw	High Sensitivity (HS)	High Mass (HM)	High Sensitivity & High Temperature (HST)	High Mass & High Temperature (HMT)
Maximum temperature	1100 °C	1100 °C	1500 °C	1700 °C
Maximum load	1.5 g	100 g	1.5 g	100 g
Load range	+/- 150 mg	+/- 10 g	+/- 150 mg	+/- 10 g
Sensitivity	0.1 µg	1 µg	0.1 µg	1 µg
Sample volume	35 ml		29 ml	
Vacuum	5 x 10 <sup>-5</sup> torr			
Reaction gas switching and mixing option	3 gases (2 mixing, 3 switching)			
Flow control option	Manual rotameters			
Mass flow option	Mass flow controllers			
FTIR interface	Patented FTIR "sniffer" interface			
Mass spectrometer interface	Patented Mass Spectrometer interface			