Thermo Scientific
TGA VersaTherm Analyzer

Thermogravimetric Analysis
High Mass and High Volume

Formerly sold under the CAHN brand

Thermo SCIENTIFIC

Thermo Scientific TGA VersaTherm Thermogravimetric Analyzer

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

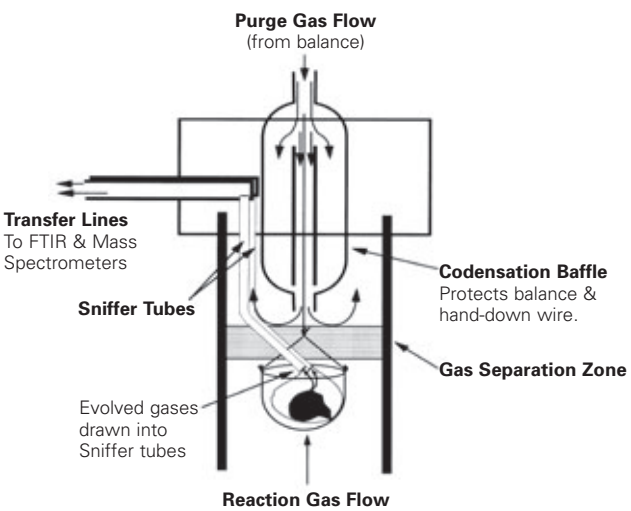
To ensure accurate results, the TGA VersaTherm enables researchers to analyze samples in their original forms and in the desired reaction environments.

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 needed to minimize sample preparation.

The TGA VersaTherm instrument offers unique high mass capability up to 100 g and high volume reactor tubes and sample containers up to 35 ml to accommodate these "real world" samples. The high mass and high volume capability of the TGA VersaTherm analyzer provides a tremendous advantage with non-homogeneous, low density, or irregularly shaped samples.



High Vacuum

TGA VersaTherm thermogravimetric analyzers can be evacuated down to 5 x 10^{-5} torr using the optional vacuum accessory. This guarantees an oxygen-free environment and fast purges.

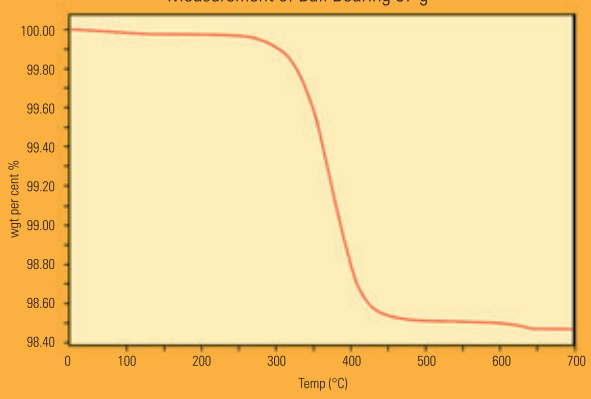
Corrosive or Reactive Gases

Corrosive or reactive gas environments including SO_2, HCL, H_2, CH_4, O_2 and H_2S easily can damage thermal analysis systems. Thermo Scientific 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.

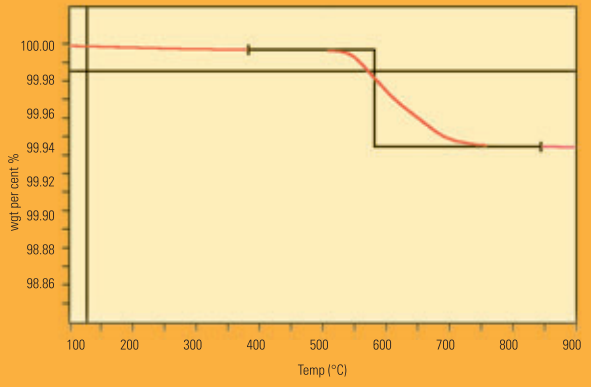
High Sensitivity

The electromagnetic null-type balance invented by Lee TGA is the heart of the thermogravimetric analyzer. 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.

Measurement of Ball Bearing 37 g



Measurement of a silicon Wafer (mass loss 0.052%)



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 a large ID "sniffer" tube to guarantee maximum gas transfer with minimal clogging.

The no-flow zone guarantees minimal off-gas mixing, and the "sniffer" tube is positioned right above the sample to provide an evolved concentrated gas effluent. The Thermo Scientific TG-FTIR or TG-MS combination provide a signal that is up to eight times higher than conventional coupled systems. The TGA software is completely integrated with the FTIR software.

The data is displayed in real time, and only one mouse click on the TGA curve is needed to open the corresponding FTIR slice. The software can be used to control both systems from one keyboard.

Software

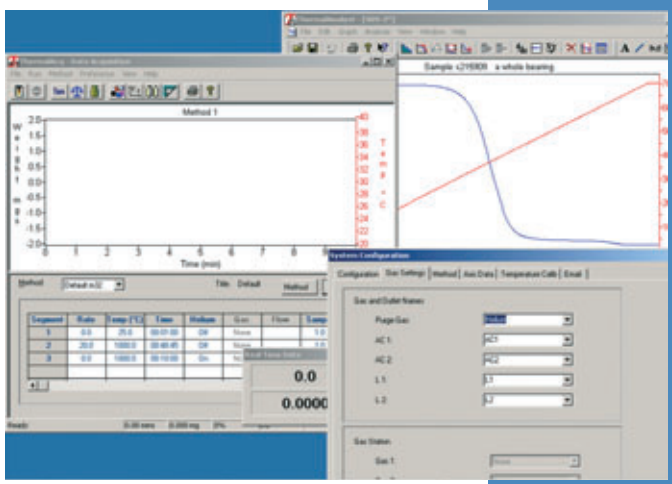
Data acquisition and data analysis are performed using the powerful Thermo Scientific TGA Thermal Analyst software. Compatible with Microsoft® Windows® NT, 2000 or XP, the software provides high flexibility and reliability.

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

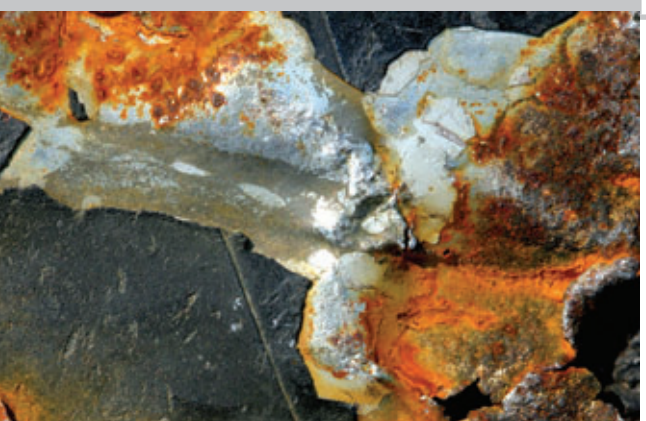
The optional TG/FTIR software offers:

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



Powerful and friendly interface.

Specifications	High Sensitivity (HS)	High Mass (HM)
Maximum temperature	1100°C	1100°C
Maximum sample size	1.5 g	100 g
Weighing range	+/- 150 mg	+/- 10 g
Sensitivity	0.1 µg	1 µg
Sample volume	Up to 35 ml	
Vacuum*	5 x 10^{-5} torr	
Reaction gas switching and mixing option	3 gases (2 mixing, 3 switching)	
Standard flow control	Manual rotameters	
Mass flow option	Mass flow controllers	
FTIR Interface*	Patented FTIR "sniffer" interface	
Mass spectrometer interface*	Patented mass spectrometer interface	
Balance bake-out temperature	125°C	
Heating rate range	0.1 to 100°C/min	
Balance construction	Gold plated and teflon coated	



*with optional accessory

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