Thermo Scientific
TGA ThermMax Analyzer

Thermogravimetric Analysis for the Extremes

Formerly sold under the CAHN brand

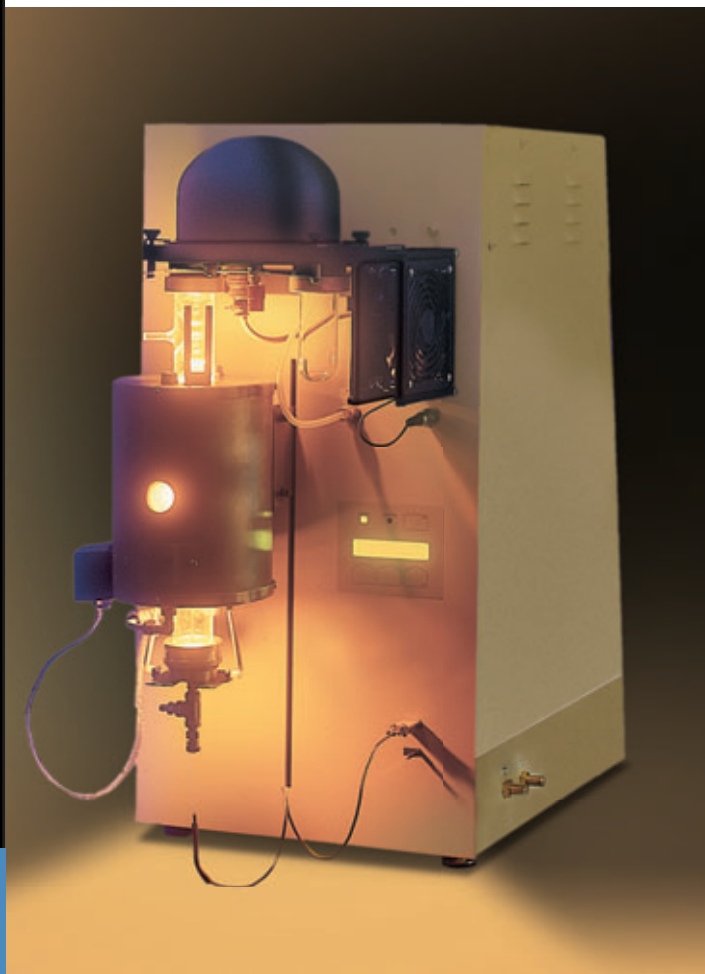
Part of Thermo Fisher Scientific

Thermo SCIENTIFIC

TGA TherMax 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 progressively increased.

Volatile components can be identified and quantified by coupling the Thermo Scientific TGA analyzer to an EGA (evolved gas analyzer). The most common techniques are TG-MS (mass spectrometer), TG-GC/MS and FTIR (Fourier transform infrared spectroscopy).



Applications for TGA TherMax Analyzers

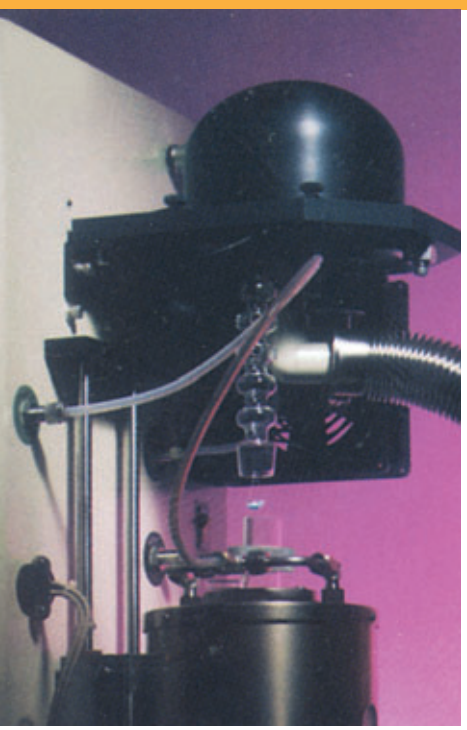
High Mass (100 g)

High Precision (0.1µg)

High Volume (35 ml)

High Pressure (100 bar)

High Temperature (1700°C)



TGA – EGA Coupling

The Thermo Scientific TGA TherMax Series can be coupled with various EGA systems including FTIR and Mass Spectrometers. The patented synergy interface uses a large ID "sniffer" tube to deliver 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 a concentrated evolved gas sample. The combination provides 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.

TGA TherMax 400

Corrosion studies often require high temperatures and corrosive gases. Expanding, low density and high surface area materials require large sample volume. Trace component analysis requires exceptional sensitivity. The TGA TherMax 400 analyzer can solve difficult thermal analysis problems. The high volume (29 cc), high temperature (1500°C) and the high sensitivity of 0.1 µg enables the system to address the most difficult samples.

TGA TherMax 500

Petroleum cracking, catalyst activaton, corrosion studies, and activated charcoal adsorbent require high pressures in a controlled, and even aggressive, atmosphere. Pressure is used to enhance or speed up reactions, or to shift pressure sensitive variables to higher temperatures. The TGA TherMax 500 analyzer tests under pressures of 70 bar at 1000°C.

TGA TherMax 700

1700°C maximum temperature combined with a sample capacity of 100 g makes the Thermo Scientific TGA TherMax 700 system is ideal for analyzing ceramics and metal powder injection molded parts. The extreme temperature range and high sample capacity make it a powerful analysis tool for complete electronic components or any large heterogeneous sample. The system is vacuum capable as are all Thermo Scientific TGAs.

Specifications	TGA TherMax 400	TGA TherMax 500	TGA TherMax 700
Temperature range	ambient to 1500°C	ambient to 1100°C	ambient to 1700°C
Controlled temperature zone	50 mm	50 mm	50 mm
Maximum load	1.5 g	100 g	100 g
Range	+/- 150 mg	+/- 10 g	+/- 10 g
Sensitivity	0.1 µg	1 µg	1 µg
Vacuum	5 x 10^{-5} torr	5 x 10^{-4} torr	5 x 10^{-5} torr
Sample volume	29 ml	35 ml	29 ml
Gas switching (option)	up to 4 gases	***	up to 4 gases
Pressure	–	up to 100 bar	–
Features			
TGA/EGA Coupling	"sniffer interface"	Total flow	"sniffer interface"

*** incl. pressure control system, mass flow controllers for three gases, back pressure regulator, and pressure transducer

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