

Cahn TherMax



Thermogravimetric Analysis
for the Extremes

Analyze • Detect • Measure • Control™

Thermo
ELECTRON CORPORATION

Thermogravimetric Analysis

Cahn TherMax TGA

The 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 progressively increased.



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

High Mass (100 g)

High Precision (0.1µg)

High Volume (35 ml)

High Pressure (100 bar)

High Temperature (1700 °C)

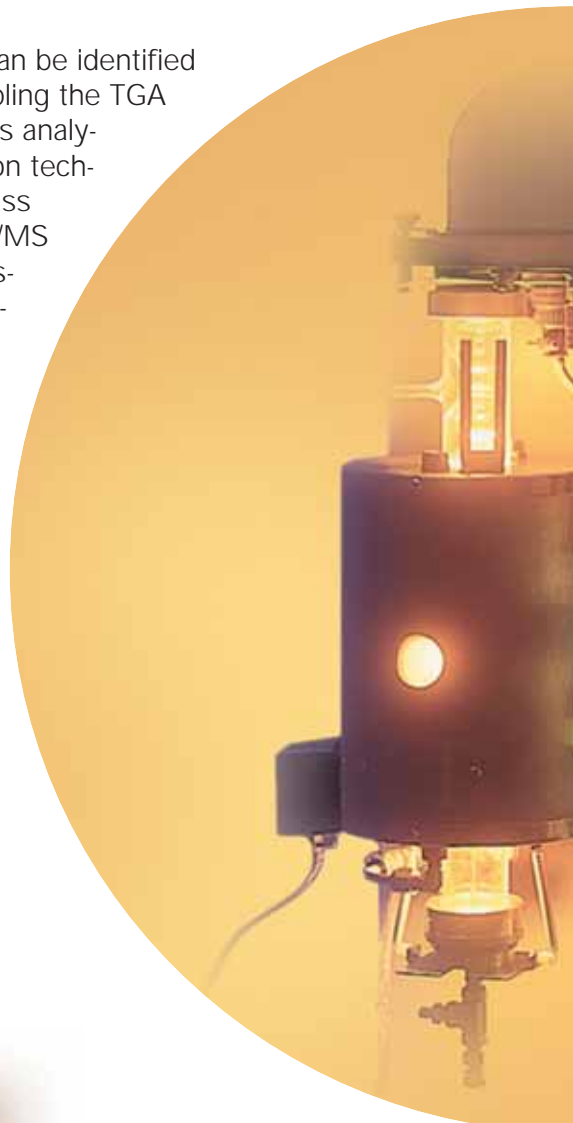
Cahn TherMax 400

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 Cahn TherMax 400 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 Cahn TherMax 400 to address the most difficult samples.



Cahn TherMax 500

Petroleum cracking, catalyst activation, 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. Cahn TherMax 500 allows tests under pressure up to 70 bar at 1000 °C.



Applications for Cahn TherMax Analyzers

Cahn TherMax 700

1700 °C maximum temperature combined with a sample capacity of 100 g makes the Cahn TherMax 700 the ideal system 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 Cahn TherMax 700 is vacuum capable as are all of the Thermo Electron TGAs.



TGA – EGA Coupling

The Cahn 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 Thermo Electron Thermal Analyst™ software is completely integrated with the Thermo 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. It also provides the capability to control both systems from one keyboard.

| Specifications | Cahn TherMax 400 | Cahn TherMax 500 | Cahn 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 | 5×10^{-5} torr | 5×10^{-4} torr | 5×10^{-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



Europe

THASS
Thermal Analysis & Surface Solutions GmbH
Pfungstweide 21
61169 Friedberg
Germany

Tel.: +49-6031-16223-1
Fax: +49-6031-16223-21
Info@thass.net
Http://www.thass.net

International/USA

Thermo Electron
Material Characterization
25 Nimble Hill Rd.
Newington, NH 03801
Tel. 800 258 0830
info.mc.us@thermo.com