

**SERIES 92 THERMAL ANALYSIS SYSTEM  
RESPONDING TO NEEDS OF ANALYTICAL AND Q.C. LABORATORIES.**

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The introduction of thermal analysis into industrial Q.A. and Q.C. laboratories has resulted in a robust, easy to use instrument, for the most part automated and computer controlled, and relatively inexpensive.

With the new series 92 multiple module system, SETARAM SA offers a modular system built around a central interface CS 92 and controlled by a micro-computer PC 92.

To the interface CS 92 may be added different individual modules according to the needs of the user: DSC 92, TG 92 and DTA 92, to complete this system a module TMA 92 is currently under development.

Versatile, supplied with a powerful data acquisition and control software, the Series 92 is simple to use whilst maintaining a high precision and accuracy.

By using the control software and the keyboard of the PC 92 micro-computer, the operator can enter all the parameters and conditions necessary for any particular experiment, according to the different programming sequences offered (temperature, waiting time, temperature ramps, opening/closing of valves, automatic taring of the balance).

All the various operating conditions are stocked in a procedure, and a listing of procedures (maximum 48) is stocked in a file in the program. It is possible therefore at any time to recall a procedure and to use it for recreating identical conditions as in a previous experiment. This software then facilitates the repetition of a test, avoids the risk of errors if re-entering the conditions anew, and allows a saving of time.

The test is completely controlled by the PC 92. The signals coming from the analysis module are displayed on the screen and recorded on a hard disk. Other specific programs (integration, glass transition, purity, kinetics, weight loss ...) are also available for the treatment of the data.

The DSC 92 uses a flat thermal sensor, which has already been extensively tested and is recognised for its robustness and simplicity of use. Due to its high sensitivity and range of temperature (-123°C to 527°C) it is well adapted for the measure of thermal effects caused by transitions, fusions and reactions in polymers, resins, elastomers and other products, as well as the determination of thermal or oxidising stability or the purity of organic products.

The TG 92 is comprised of a robust, very sensitive micro-balance together with a furnace. Two different furnaces are available, dependant upon the range of temperature required for the analysis, namely 1.000°C or 1.750°C, which covers a very diverse range of potential applications: dehydration, decomposition of minerals and ores, inorganics, oxidation and combustion of organic materials, characterisation of polymers by degradation, investigation of ceramics.

According to the specific nature of the investigation, an experiment may be carried out in an inert or reactive atmosphere, or under a vacuum.

Thermogravimetry provides only the weight loss of a sample as a function of time or temperature, whereas Differential Thermal Analysis can detect transformations in the sample (fusion, crystallisation ... ) which are not associated to the weight loss. It would therefore be of interest to be able to combine the two techniques simultaneously.

The TG/DTA 92, using two separate samples, is capable of measuring both weight loss and thermal effects by utilising the same furnace identical gas environments.

The module DTA 92, which uses the same basic structure as the TG 92, is essentially designed for DTA studies only.

The transformation from a DTA 92 into a TG 92 (or vice versa) can be achieved with the minimum of inconvenience.

Given the variety of techniques available and the wide range of temperature attainable, the Series 92 Thermal Analysis system can respond to the analytical and Q.C. laboratories requirements to characterise a diversity of materials, to simulate thermal behaviour or to go beyond the empirical stage of certain measurements.