

Software features for DSC XP-10 and TGA XP-10

- Complete software for data collection and analysis
- Display of the first derivative
- Free axis scaling
- Transfer of ASCII files
- Adding comments and lines

DSC Software

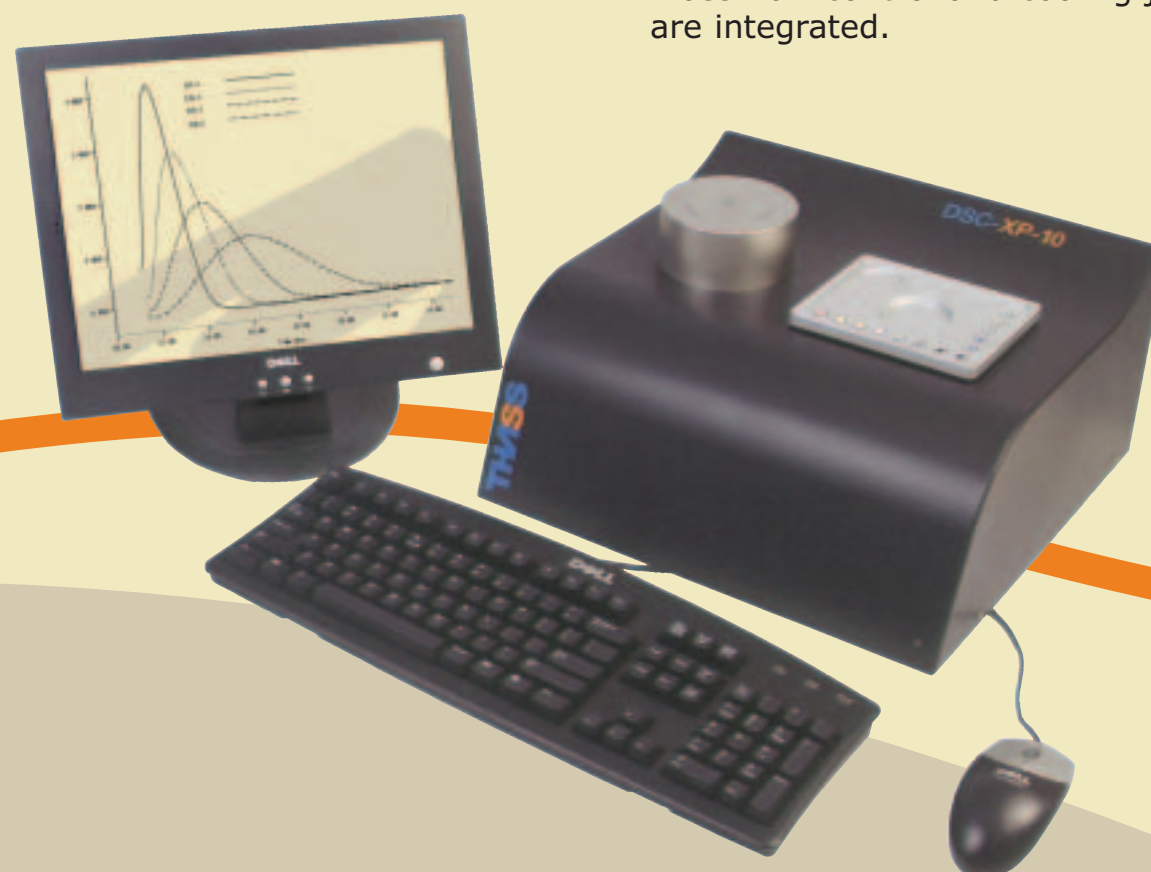
- Melting temperatures
- Peak area integration
- Peak Search function
- Glass transition temperatures
- Calculation of liquid fraction
- Onset temperatures
- Peak maximum by stroke of a button
- Calculation of activation energy

TGA Software

- Weight loss analysis
- Onset temperatures
- Peak top temperature
- Peak search function
- Calculation of activation energy
- Borchard Daniels Kinetics

Both modules (DSC XP-10 & TGA XP-10) are equipped with an embedded industrial PC. Without any additional equipment, samples can be measured, data stored, analyzed and printed. Mouse, 15" flat screen monitor, and keyboard are directly connected to the Analysis module. The Windows XP® operating system is uploaded from a flash disk.

By that the systems are extremely easy to operate and guarantee the highest possible stability. For data storage and further analysis the files can be send via the Ethernet connection to any other PC. The fully integrated data analysis program allows all necessary evaluations like peak integration, onset temperatures, glass transition, peak search and a lot more. Gas switching, software selected mass flow control and cooling jacket are integrated.



All necessary options included

The systems are always equipped with all accessories needed for various applications. Mass flow controllers and valves are integrated in the DSC and the TGA modules. As a standard both units are with a cooling jacket for fast and controlled cooling. The gas flow rate is controlled and the atmosphere switched by the powerful measurement software.

High Precision Temperature Control

The DSC temperature control block is made of aluminium. The TGA block of ceramic. The heating coils surround the heat exchangers. The temperatures of the heater wire and the cooling jacket are fed back to the intelligent control electronic. All signals are processed with 24 bit A/D converters. This guarantees an extremely precise and reproducible heater control for stable baselines and accurate temperature readings.

DSC XP-10

Flexible cooling system

With the cooling jacket surrounding the furnace, the XP-10 may use different coolants. Air or water from the tap for fast cooling after the measurement, a water cooling circulator for controlled cooling in the sub ambient range or liquid nitrogen for temperatures below -80°C.



DSC XP-10 Specifications:

Temperature range:	-80 to 400°C
	Start & end temperature difference < 1°C
Temperature resolution:	0.01°C, measured and in software
	0.1°C on instrument display
Temperature accuracy:	0.2°C
Heating and cooling rates:	0.1 to 50°C/Min.
Resolution of heating rate:	0.1°C/Min.
Measurement range:	± 300 W
DSC signal resolution:	0.4 µW
Calorimetric sensitivity:	2 µW
Time constant (Indium):	2.5 seconds
Gas switching:	2 Gases
Gas control:	Mass flow controller

Measurement Principle

This heat flux DSC measures the temperature difference between the sample and the reference platform. With a known thermal resistance between the furnace, the sample and reference platforms, the heat flow into or out of the sample is proportional to the temperature difference. A platinum PT 100 with high accuracy and resolution determines the furnace temperature. With a known geometry and the thermal lags in the systems, the sample temperature is calculated. The heat flux DSC provides the following advantages:

- Unsurpassed stable baselines
- Excellent signal to noise ration
- High resolution

TGA XP-10

Measurement Principle

The TGA XP-10's top loading system with furnace and sample above the furnace mechanical tarring of up to 1.5 g is no longer necessary. The small furnace guarantees an unsurpassed accurate temperature control and fast heating rates even with high sample volumes. The sample thermocouple is in thermal contact with the sample container, this allows accurate temperature readings and an easy temperature calibration with pure melting metals. The TGA XP-10 top loader provides the following advantages:

- Unsurpassed stable baseline
- Excellent signal to noise ratio
- Easy temperature calibration

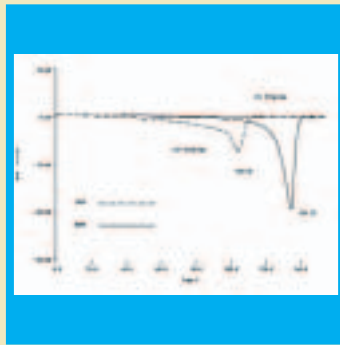
TGA XP-10 Specifications:

Temperature range:	RT to 1000°C
	Start & end temperature difference < 1°C
Temperature resolution:	0.01°C measured and in software
	0.1°C on instrument display
Temperature accuracy:	0.2°C
Heating and cooling rates:	0.1 bis 50°C/Min.
Resolution of Heating rate:	0.1°C/Min.
Measurement range:	0-1.5 g
TGA signal resolution:	2 µg
Gas switching:	2 Gases
Gas control:	Mass flow controller

XP - Series

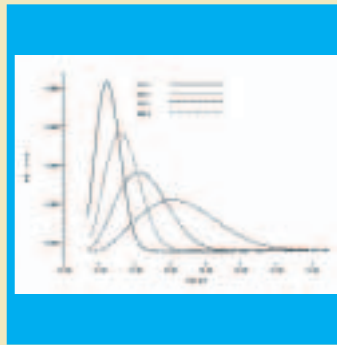
A New Concept in Thermal Analysis

Polymer Identification



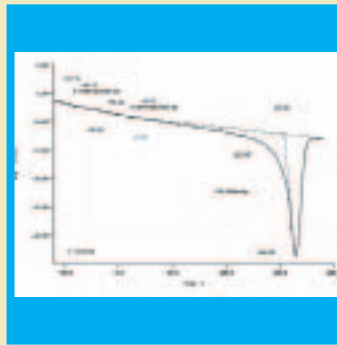
The most crystalline polymers have very well defined melting temperatures and melting enthalpies. With those parameters, a polymer can be identified. The curve shows the overlay of an HDPE and an LDPE.

Isothermal Crystallisation



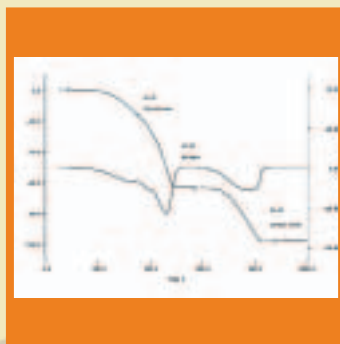
The diagram shows the measurements of a Polypropylene at different isothermal temperatures. (124° to 130°C) in steps of 2°C. Even those minor temperature changes lead to a totally different crystallization behavior, and show clearly the importance of the temperature control and the precision of the temperature measurement.

Analysis of block copolymers



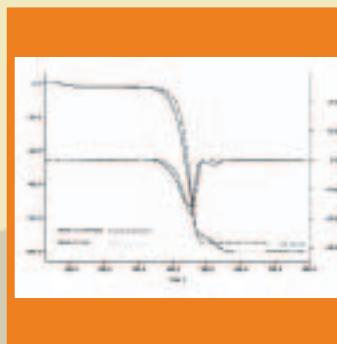
The curve shows the measurement of a Polypropylene with very small amounts of Polyethylene and a rubbery phase. One sees three transitions: The melting of the main component, the PP, a small transition at 118°C, caused by the PE and the glass transition of the rubbery phase.

Component Analysis



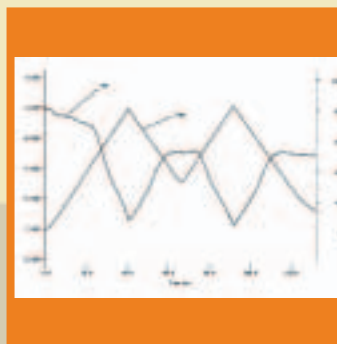
The TGA gives a quick and reliable analysis of the composition of rubber mixtures. Up to 300°C the plastizisers evaporate, up to 600°C, the weight loss is caused by the polymer degradation. After switching from nitrogen to air in the reaction chamber, the carbon black burns

Thermal and oxidative stability



To determine the oxidative or thermal stability, the sample is measured in oxygen or nitrogen. The measurement shows the overlay of two measurements of the same sample (Nylon 6) in different atmospheres. One can clearly see that the degradation process is totally different.

Measurement of high temperature superconductor



BaYCuOx is a high temperature superconductor. The measurement shows adsorption and desorption of oxygen when the sample is heated or cooled. The weight losses and gains are only in the range of 1-2%. In order to get reliable results, the baseline of the TGA must be extremely stable.



Contact:

Thermal Analysis & Surface Solutions GmbH
 Pfingstweide 21
 61169 Friedberg
 Germany

Tel.: +(49) 6031-16224-50
 Fax: +(49) 6031-16224-59

E-Mail: info@thass.net
<http://www.thass.net>

or your local distributor