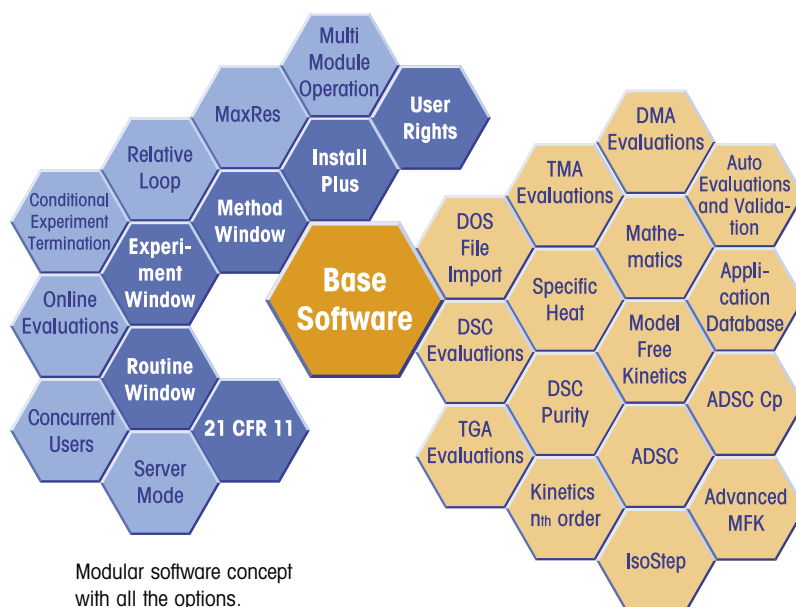


**Thermal analysis
for all requirements**

METTLER TOLEDO

Even simpler and more efficient and you only pay for what you need

Thermal analysis (TA) comprises a number of different methods and is nowadays used for an extremely wide range of applications. It provides laboratories with valuable results in research, in process and product development, and in quality assurance environments. Many problems can be solved by using a combination of different TA measurement techniques.



In any modern TA system, the software is of paramount importance and is the key to increasing efficiency. The STAR® software allows up to 34 samples per module to be automatically measured, evaluated and assessed by different methods and includes the following key features:

- **Numerous evaluation possibilities** – unlimited flexibility
- **Automation** – high sample throughput including result assessment
- **Integrated database** – supports work to GLP/GMP requirements
- **21 CFR Part 11 compliance** – allows user level management and electronic signature
- **Definition of specific user rights** – match the organization of your laboratory
- **Modular concept** – allows future expansion to meet new needs
- **Simple operation** – saves a lot of time
- **Multiuser-multitasking** – several users can work at the same time
- **Up to 8 modules** – can operate simultaneously

Easy to use

The intelligent graphical user interface dramatically simplifies your daily work. You can handle your entire workload with just a few mouse clicks: open the window, select the desired evaluation method and the results are immediately displayed.

If you have chosen the wrong evaluation range, you can quickly make the necessary corrections. You always have a clear overview and can rapidly switch between windows via the task bar.

The software's intuitive easy-to-use features ensure that even inexperienced users immediately feel at home. The online help answers any questions you might have and on-screen prompts draw your attention to invalid entries.

Modular concept

The STAR® software is designed around the powerful base software, which includes essential parts of the Installation, Module Control, and Evaluation Windows. The base software can be enhanced with various special software options to meet your current analytical needs and can easily be expanded later.

on for new applications or to support other modules. This flexible modular concept has the big advantage that you need only purchase what you really require at the time.

Five windows – one database

The **STAR®** software utilizes five main programs (windows) linked to one another via the database. The user selects the appropriate window depending on the actual task to be performed.

Thanks to this unique modularity, we can configure a system that exactly matches your requirements.

The **Installation Window** allows you to install new devices or other objects relevant to the database.

The **Module Control Window** presents the various devices that are connected (measuring modules or a balance). The devices can be operated directly via the computer. Simple methods and experiments for routine operation can be developed in this window.

The **Method Window** is only required if you wish to develop more complex methods graphically.

In the **Experiment Window** you decide which method you want to use and enter data specific for the experiment such as the sample name and sample weight. You are then ready to start the measurement.

The **Routine Window** combines the basic functionality of the Method and Experiment Windows and is displayed in the Module Control Window.

The **Evaluation Window** is included in the base software and is used to evaluate experimental curves.

Multimodule operation

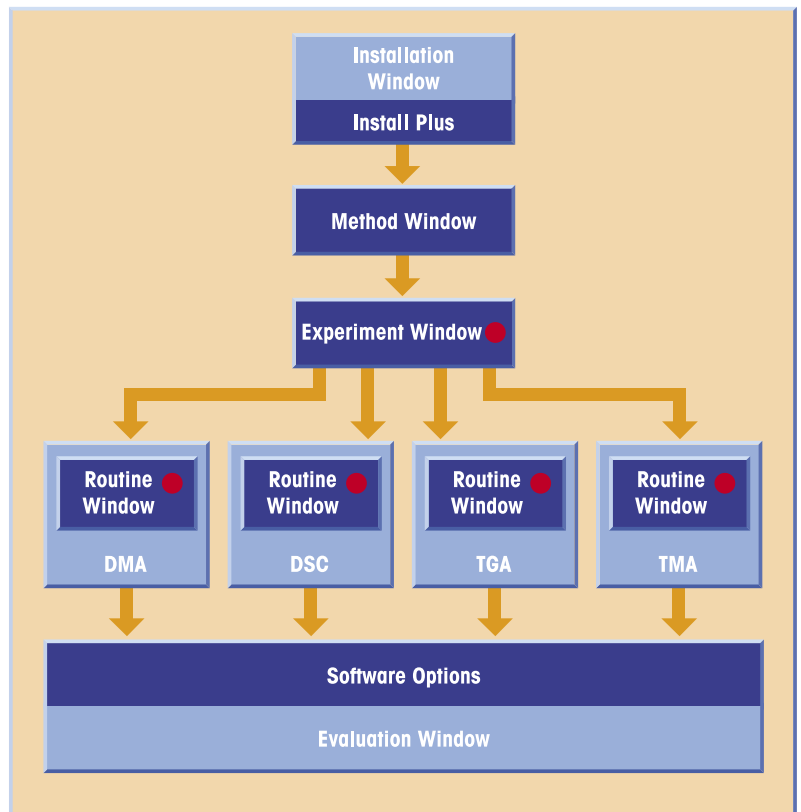
The Module Control Window allows you to control the installed modules. Data is transferred online from the measuring module to the computer, ready for evaluation. Up to 8 modules can be operated at the same time. The Module Control Window displays not only the experiment curve but also the status of the module. You know its status, e.g. furnace temperature, remaining measurement time, even without looking at it.

MS Windows® operating system

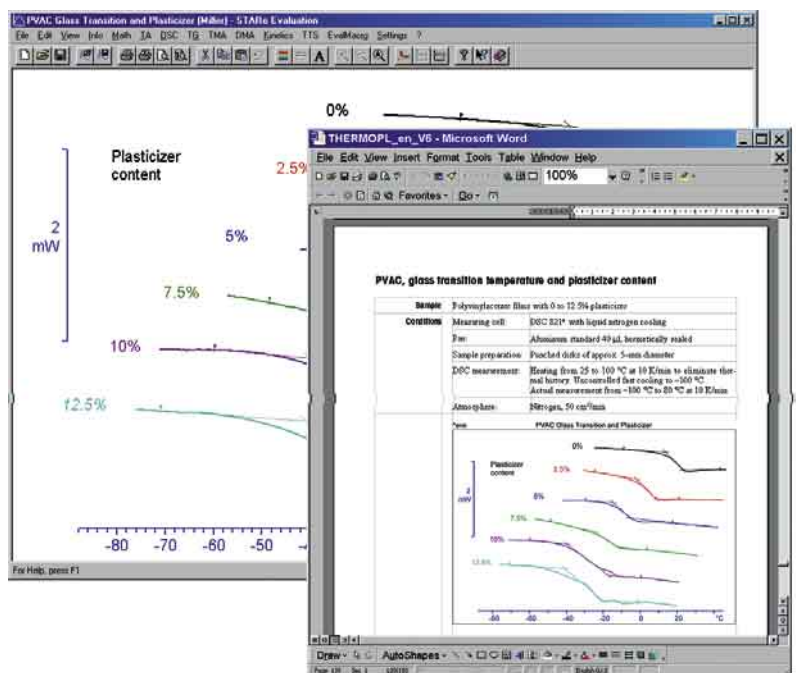
MS Windows® provides a modern multiuser/multitasking platform for the **STAR®** software. Using copy/paste operations, you can export the entire evaluation data to other Windows applications, e.g. to a Word document or a PowerPoint presentation.

Numerous evaluation methods

Evaluation of measurement data is now extremely easy thanks to the **STAR®** software's modern concept and the large number of specific software options available. The different settings allow enormous flex-



- Base system
- Relational database
- Options
- or the Routine Window is needed to perform measurements.
- Either the Experiment Window

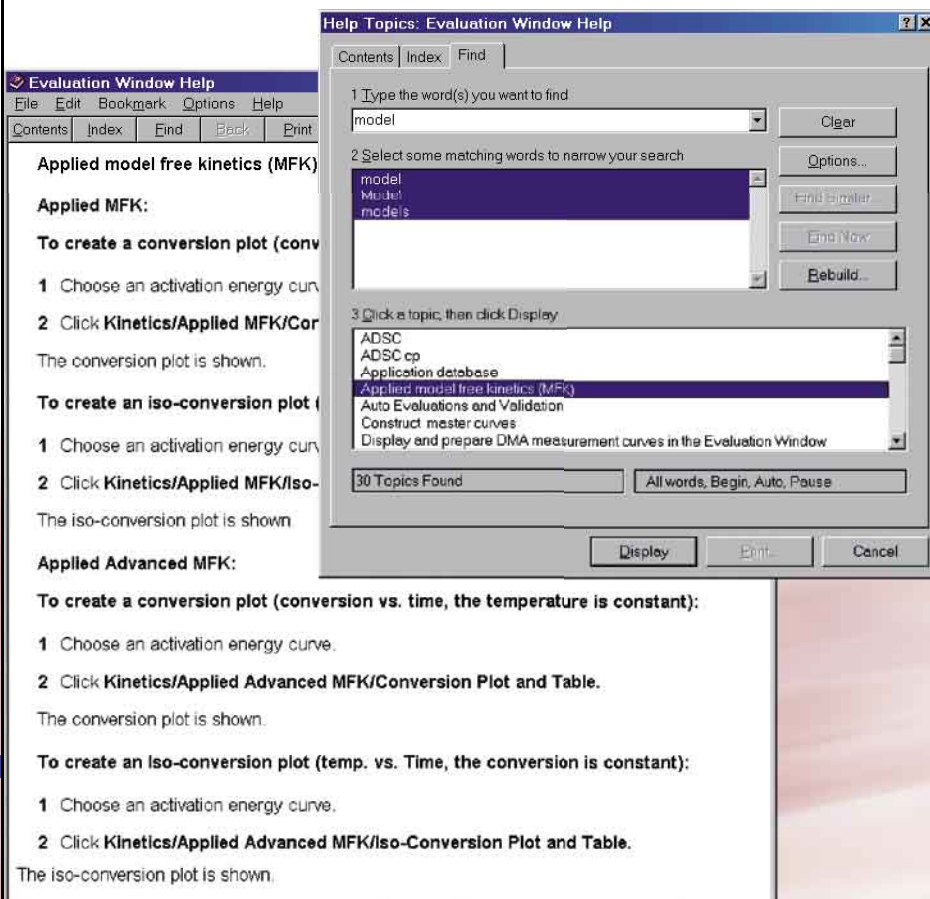


Copy and paste possibilities

ibility; changes can be made within seconds. Evaluation data can be stored and reevaluated or reprinted later on.

Integrated database provides data security and rapid access

- ☐ Sound investment
- ☐ Integrated database
- ☐ 21 CFR 11 compliance



A view of the help file

Online help

The operating instructions are now integrated in the STAR® software as online help. Using global help, you can quickly find your way via topics and keywords to the particular point of interest. Context-sensitive help allows you to jump directly from the menu or dialog box to the relevant page of the help file. You can then search for other topics.

Integrated database

As soon as you have logged on to the system as a user with your name, you can start your own programs. All the data you generate is stored under your name. Even years later you can check who measured what, when and with which method, measuring module and adjustment data. Thanks to the database, you always have a clear overview, even with very large volumes of data. Filter settings allow you to perform selective searches in the database and find the right items quickly.

Methods, experiments, experiment curves and evaluations can be searched using criteria such as name, date, user, measurement technique or method group.

A sound investment

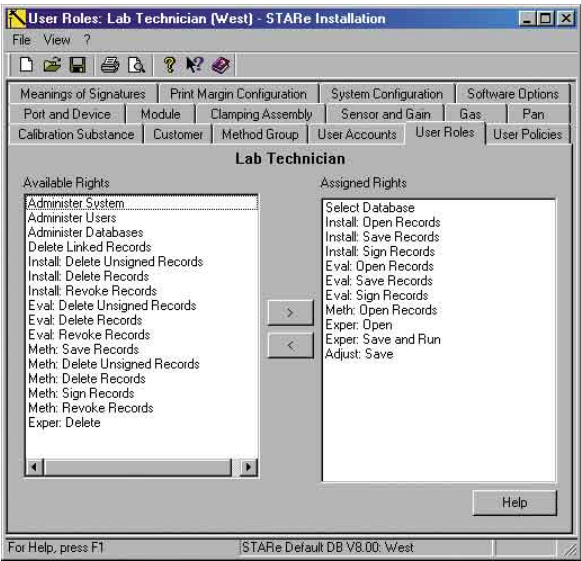
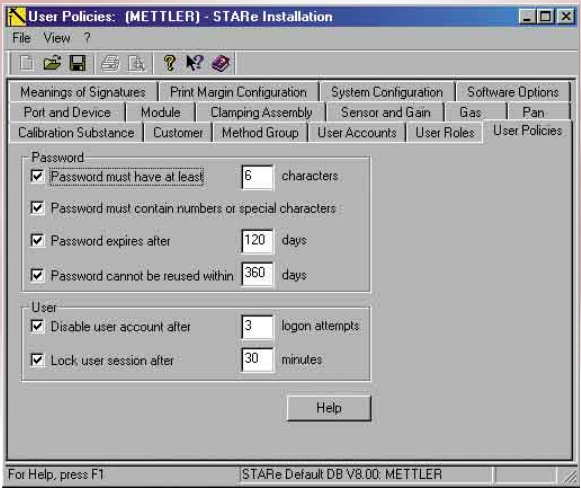
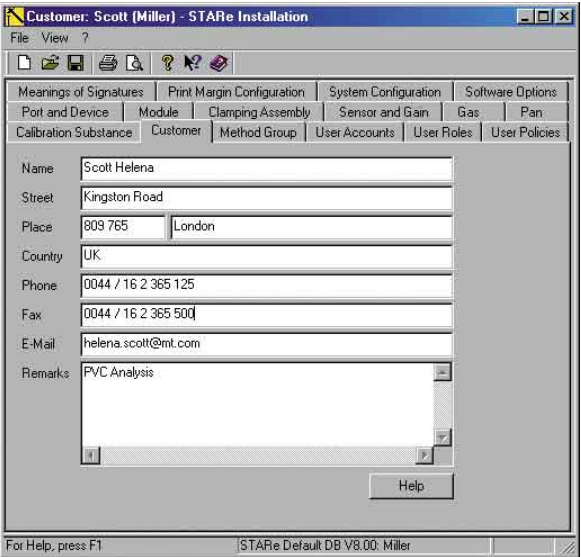
Earlier TA modules can be integrated into the STAR[®] system by upgrading the controller (TC10A or TC11). The modules differ from newer modules only in terms of measurement performance. This means you can take advantage of the increased in efficiency offered by the STAR[®] software with these modules as well.

Balance connection

To avoid errors, you should ideally connect a balance to your TA system. With a single keystroke, you can then transfer the sample weight to the STAR[®] software. Handwritten sample weights on slips of paper are a thing of the past – this helps you to comply with modern quality standards.

Fast data management

With the Install Plus software option, you can make full use of the relational database by matching it to



Views of the Install Window

your individual requirements. You can define new users, customers, your own crucibles, gases, method groups or calibration substances.

Reliable management of large amounts of data

The integrated relational database protects your data from unauthorized access external to the STAR[®] software.

Any data stored is given a meaningful name and the date. If several people work with the same system, the data is assigned individually to each user. The "User Rights" software option even enables you to grant each user specific rights that correspond exactly to the user's function in the laboratory, e.g. as a technician, lab manager or administrator.

GMP and 21 CFR Part 11 compliance

STAR[®] original raw data cannot be changed. If changes are made, the raw data is copied, changed as appropriate and then resaved under a new name and date. The original data always remains unchanged.

In addition, methods that have been used once cannot be changed. This means that years later you can see how the original measurement was performed and check the method used. The CFR operating mode incorporates additional security features. The requirements regarding "Electronic Records" and "Electronic Signatures" stipulated by the FDA 21 CFR Part 11 regulations are met and allow full electronic data archiving.

From routine to research

- ☐ Easy-to-use routine operation
- ☐ High degree of automation
- ☐ Comprehensive calibration possibilities

The Routine Window has been developed for general purpose operation. It helps you to set up and prepare for the experiment. All you have to do is:

1. Select the method

2. Enter the sample name

3. Enter the sample size

and then start the measurement. You can create simple methods with this option in the upper part of the Module Control Window.

A routine method includes

- a maximum of 10 different segments (dynamic and/or isothermal)
- automatic blank curve subtraction (if required)
- an EvalMacro (evaluation macros can be linked to a method for automatic evaluation at the end of the measurement)
- gas switching and sample size range definition

The sample weight can of course be transferred directly from a METTLER TOLEDO balance. The base software together with the Routine Window software option is the most favorably priced **STAR[®]** software combination for running measurements.

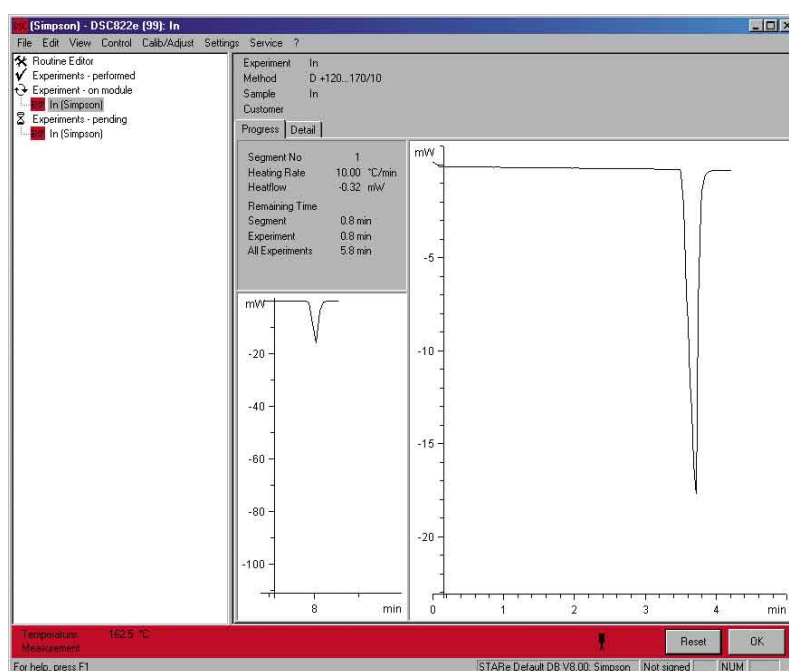
Always in the picture thanks to module status display

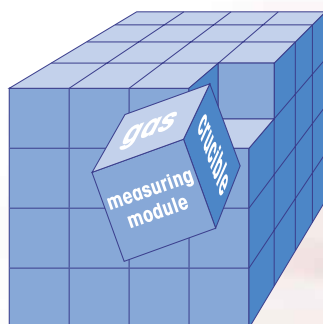
Each measuring module in use has its own separate window. Except for inserting the sample, you can operate the module entirely via the computer using this window.

Equipped for automation

Both the Routine Window and the Module Control Window include the experiment buffer memory. Its contents are automatically processed with modules equipped with a sample robot. But even if you do not have a sample robot, you can still use the buffer memory to prepare and store several experiments.

View of the Module Control Window with the Routine Window





FlexCal™

A complete adjustment data record is stored in the database for every measuring module, gas and crucible combination.

Optimum measurement performance thanks to extensive calibration possibilities (FlexCal™)

Special attention has been devoted to calibration and adjustment with the STAR® software. Calibration should be as easy as possible, but at the same time allow complete flexibility. The type of calibration you use is your decision. The possibilities are:

- manual
- automatic
- only one measurement (single or multiple samples, e.g. In/Zn)
- several single measurements (individual samples)

The best accuracy is achieved by performing repeated measurements of single samples. This procedure can also be automated.

The full measurement performance capabilities of a module cannot be utilized until adjustment has been properly completed. An adjustment data record can be stored in the database for each combination of module, crucible and gas. This is then automatically used in subsequent measurements.

Parameters that can be adjusted are:

- Temperature
- Measuring cell characteristics (tau lag): when adjustment is completed, onset temperatures are identical, even at different heating rates.
- Sensor, e.g. the heat flow, with the DSC; the SDTA sensor, with the TGA/SDTA.

Automatic weighing-in

With the TGA/SDTA851® thermogravimetric module and sample robot you can even weigh-in samples semi- or fully automatically. No additional balance is needed with this module unless you want to measure and weigh-in at the same time.

An additional option allows you to open hermetically sealed crucibles automatically just before the start of a measurement.



Experiment buffer

DSC (Simpson) - DSC822e (99)

File Edit View Control Calib/Adjust Settings Service ?

Pos	User	Experiment	Method	Sample Size	Pan Weight	TEB	FOP
101 (performed)	Simpson	Calib DSC Temp...	Calib DSC Temp...	6.7320 mg	0.0000 mg	IT	Off
102 (performed)	Simpson	Calib DSC Temp...	Calib DSC Temp...	6.7320 mg	0.0000 mg	IT	Off
103 (pending - next)	Simpson	Calib DSC Temp...	Calib DSC Temp...	3.3460 mg	0.0000 mg	IT	Off
104 (pending)	Simpson	Calib DSC Temp...	Calib DSC Temp...	3.3460 mg	0.0000 mg	IT	Off

Temperature: 25.0 °C
Standby (standby temperature)

For help, press F1

STARe Default DB V8.00: Simpson Not signed NUM

Single Heatflow Adjustment

First Select Gas and Sample Holder

Gas: Air, Ar, CO2, H2-4%/Ar-96%, He, N2

Sample Holder: Alumina 150ul, Alumina 30ul, Alumina 70ul, Alumina 900ul, Aluminum 100ul, Aluminum Light 20ul

H2O, Hg, In, Isathem, n-C5H12, n-C6H14

Position: 2

Delta H [J/g]: 28.34

True Val [J/g]: 28.45

Buttons: OK, Cancel, Clear, Delete Entry, Help

Heat flow adjustment window

Always well-informed

- ☐ Graphical method development
- ☐ Automatic calibration
- ☐ Straightforward experiment design

Clear-cut method development

The Method Window can be used to program practically any type of temperature profile. The method is developed and modified graphically. You immediately see the temperature profile and where gas switching occurs.

Additional method parameters can be defined:

- Premature experiment termination can be specified for each segment
- Text for sample preparation, which appears when the experiment is selected
- Sampling rate and sample size range
- Method group: for example you can assign a method to thermoplastics
- User-defined calibration methods
- Eval macro: automatic evaluation at the end of the measurement
- Automatic subtraction of blank curves
- Definition of the start and end behavior of the measuring cell

Automatic subtraction of blank curves

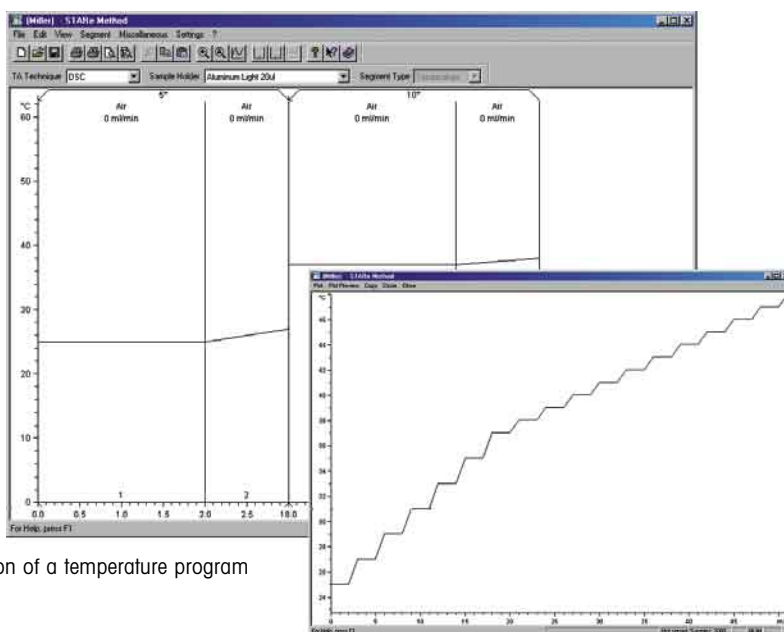
In the method you need only specify whether measurement should be performed with or without blank curve correction. The database ensures that the latest appropriate blank curve is automatically subtracted. Errors are thus impossible. The name of the blank curve can be queried in the Evaluation Window. If you have forgotten to activate automatic blank curve subtraction in a measurement, you can of course perform a manual subtraction afterward.

Automatic calibration

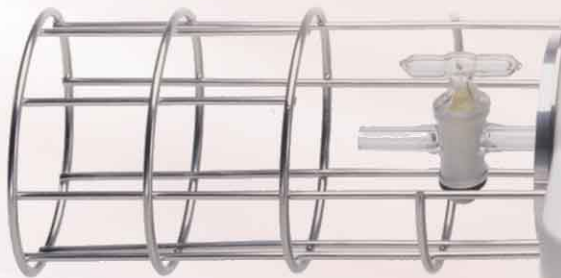
If you want to calibrate your module with a special standard substance, you can define this in the method. Depending on the type of calibration selected, the system automatically evaluates the curve and displays the results.

Always the right adjustment data record

After an adjustment, the resulting adjustment data record is stored according to the measuring module, crucible and gas. The database can store an up-to-date record for each combination.



Graphical representation of a temperature program



In the experiment you specify the type of crucible to be used for measurement. The type of gas is already defined in the method. The database therefore has all the information it needs to transfer the correct data record to the module for each segment. With methods employing several gases, the right data records are used automatically.

The Experiment Window, the actual measuring module manager

In the Experiment Window, you assign the experiments to the different measuring cells. You select the measurement method and enter the sample name and sample size. The lower part of the window displays all the modules that can use this method. A single mouse click sends the experiment to the appropriate module for execution. All the data still required, for example adjustment data, is retrieved from the database invisibly in the background and transferred to the module.

Many different possibilities

If you assign the experiment to a customer, it will be even easier to find experiment curves and evaluations later on. Before the measurement, you can enter an additional text for the evaluation in the Experiment Window. There is also an entry box for numbers that you can use as an index for notes in your lab notebook. If your method includes a sample preparation text, this is displayed here as a reminder. You can transfer the sample weight directly from a METTLER TOLEDO balance connected to the system.

Experiment Window

Unlimited evaluation possibilities, extensive range of software options

- The right evaluation method for each technique
- User Level Management with User Rights option
- From simple to complex software solutions

Unlimited evaluation possibilities

In the Evaluation Window you analyze the measured curves. You can lay out your evaluations with virtually the same ease as in a professional graphics program. Clicking an object, changing its color and shifting it can be done within seconds. An evaluation can include measurements obtained with different TA techniques. For example, DSC and TGA measurements can be easily compared and evaluated in a single chart. The intelligent conversion of units ensures that curves and results are always correctly annotated. This means you

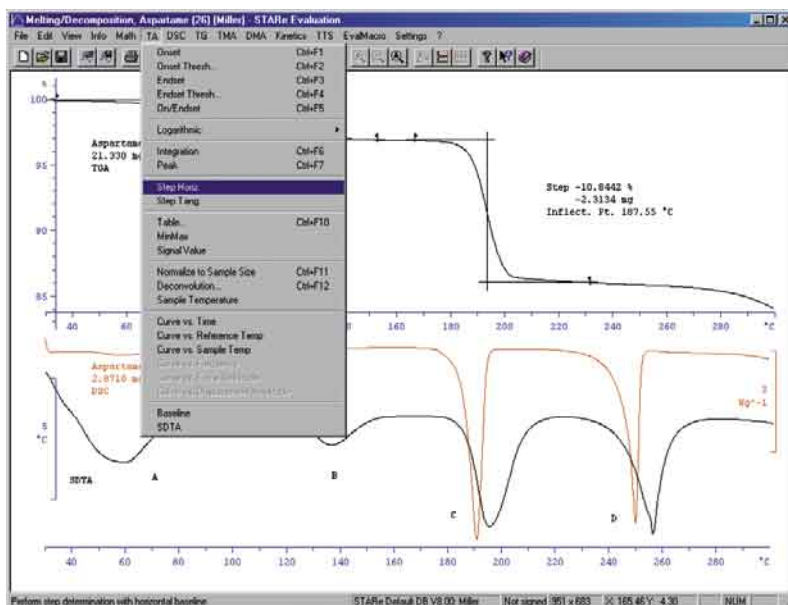
can perform additional evaluations on calculated curves, e.g. derivative curves, and always get the correct units.

Numerous evaluations included in the base software

A large number of evaluations are already available in the base software. They can be used for curves originating from different measurement techniques. The correct units are added automatically. For all these applications, the system sets the optimum evaluation limits within a given range.

Evaluation and correction is easy

You open a box with the mouse, click the desired evaluation and the results are displayed immediately. If you are not satisfied with the evaluation, you can modify the evaluation limits and rerun the calculation. Since the results are recalculated immediately, you can check what effect the new values have had. If you are satisfied with the evaluation, you can store the results in the database under a name and print them in black and white or color.



Numerous software options

In addition to the comprehensive evaluation possibilities provided by the base software, the following special software options are available:

Software option	Description
DSC Evaluations	Glass transition, content, conversion and enthalpy
Specific Heat	Specific heat (c_p) and specific heat with sapphire (DIN method)
DSC Purity	According to the simplified and full van't Hoff equation (melting point depression)
IsoStep	Separation into heat capacity and conversion components
ADSC c_p ¹⁾	Determination of the heat capacity with temperature-modulated methods
ADSC ¹⁾	FFT, steady state ADSC and ADSC to separate overlapping effects (c_p and kinetic parts)
TGA Evaluations	Content and conversion
MaxRes	Event-controlled optimization of heating rate based on patents of Professor Dr. F. Paulik*
TMA Evaluations	Glass transition, expansion and conversion as well as Young's modulus determination
DMA Evaluations	The time-temperature superposition principle allows material properties to be simulated outside the range of measurement (MHz and GHz range)
Mathematics	Division, addition, derivatives, smoothing, cutting segments, envelope curves and many other evaluations
Kinetics n^{th} order	n^{th} order, ASTM E698, ASTM E1641, isothermal kinetics, simulation, conversion plot, isoconversion plot
Model Free Kinetics	Activation energy curve, simulation, conversion plot and isoconversion plot based on dynamic curves
Advanced Model Free Kinetics	Activation energy curve, simulation, conversion plot and isoconversion plot based on any curves
Automatic Evaluations and Validation	In an EvalMacro you can define how the curve should be evaluated at the end of the measurement. In addition you can have a results check performed
DOS File Import	ACSII text files can be imported into the STAR [®] software (METTLER as well as non-METTLER data)
Application database	Switching between: user, tutorial, food, pharmaceuticals, thermoplastics and elastomer application databases, corresponding to the collected applications booklets

Please request the specific software data sheets for more detailed information.

* US. Pat. 4812 05 Paulik J., Paulik F., Arnold M., US. Pat. 33 44 654 Paulik F., Paulik J., Erdey L.

¹⁾ These evaluation options are not available in the U.S.A.



Extremely wide application range

- ☐ Unmatched level of automation
- ☐ Unequalled graphic display possibilities
- ☐ Extremely flexible presentation of results

Auto evaluation

If you routinely have to perform the same measurements, you can automate practically the entire process. Using the first measurement, you generate an EvalMacro. You then store the EvalMacro in the database and link it to a new method in the method development. A really useful feature is the possibility of letting the system set evaluation limits. If the expected effect does not always appear at exactly the same temperature, you simply specify that the macro itself should determine the optimum limits within the defined range in the evaluation. This is particularly useful when measuring oxidative stability. An EvalMacro always refers to a measurement. It can however include several evaluations with very many results.

Assessment of results

You can define a valid range for each result line. The system can use this to assess the result after the evaluation in much the same way as you yourself would. If a result lies within or outside the expected range, a predefined OK or KO text appears. In combination with the sample robot, this offers

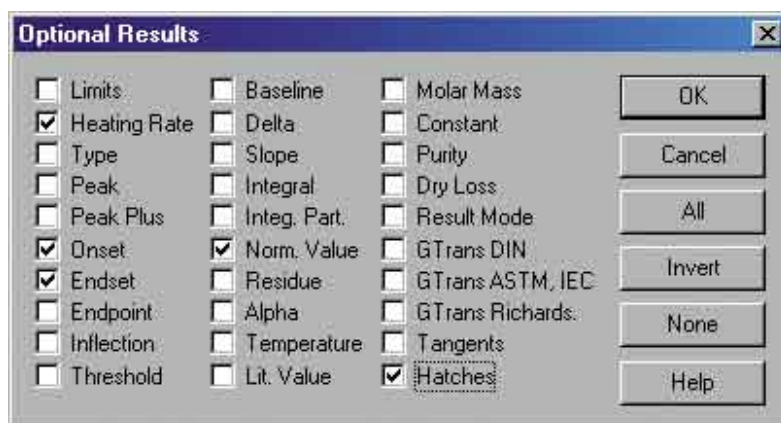
an enormous degree of flexibility. After sample preparation, you can for example perform other tasks

until all 34 thermograms have been fully evaluated and the results sent to the output device.

The following evaluations are included in the base software

- Onset and endset (with and without threshold value)
- Integration (with nine different baseline types)
- Peak
- Step (with horizontal or tangential baselines)
- Table: different possibilities to present curves in tabular form
- Min Max: determination of the minimum and the maximum within a given range
- Signal value
- Normalization to the sample size: conversion to W/g or % presentation
- Deconvolution; signal deconvolution for crucibles with a long time constant
- Plotting of the curves versus time, reference temperature or sample temperature
- Display of sample temperature
- SDTA® (Single Differential Thermal Analysis): calculation of the DTA curve

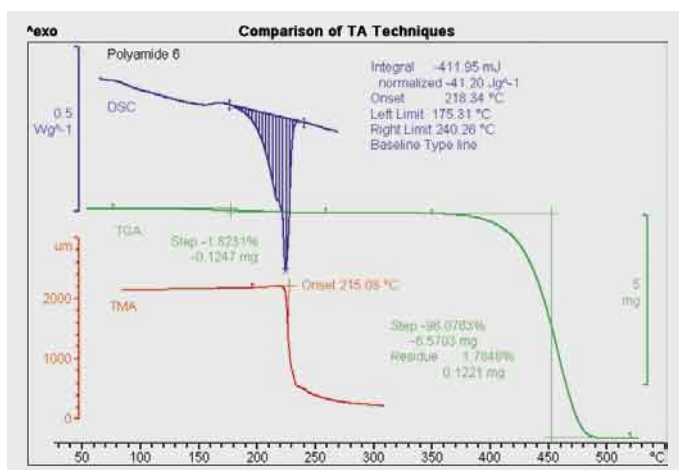
Selection of optional results



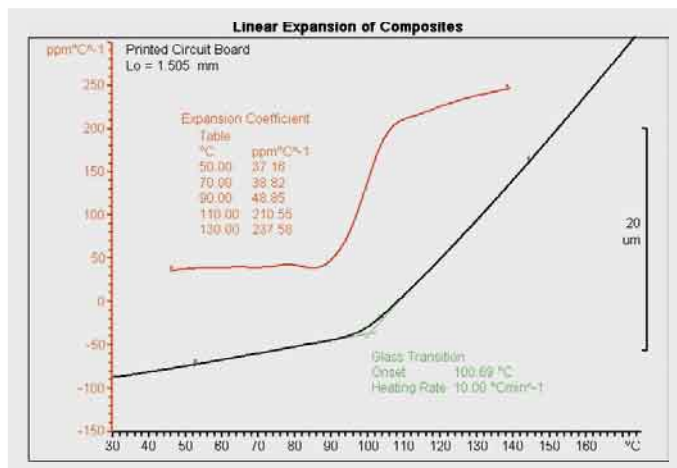
Applications

Thermal analysis comprises a wide range of different measurement techniques and methods. It is already firmly established in modern analysis. No matter what type of analytical problem you have to solve, you can be sure that the **STAR^e** system will provide you with a solution. The following examples present a brief overview of some of the analytical possibilities the **STAR^e** software offers you.

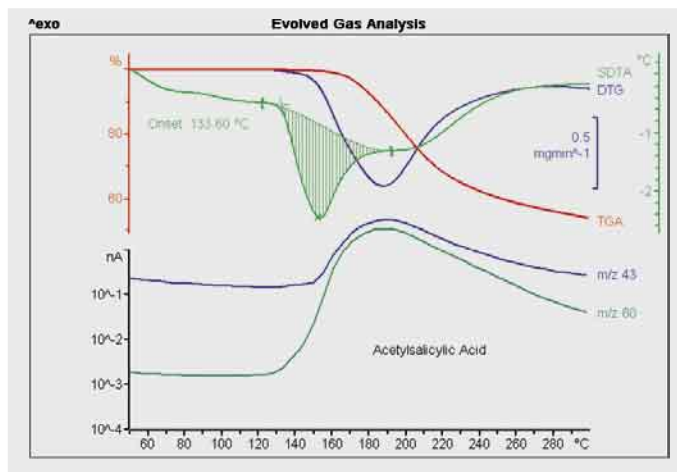
	Plastics	Pharmaceuticals	Organic products	Inorganic products	Foods
Physical properties					
Specific heat	•	•	•	•	•
Coefficient of expansion, shrinkage behavior	•				
Elastic behavior	•				
Phase transitions					
Melting/crystallization	•	•	•	•	•
Evaporation, drying	•	•	•	•	•
Solid/solid polymorphic changes	•	•	•	•	•
Glass transition, softening	•				•
Polymorphism		•	•	•	•
Liquid fraction					•
Liquid-crystalline transitions	•		•		
Crystallinity	•				
Heat of fusion	•	•	•	•	•
Purity		•	•	•	
Chemical changes					
Decomposition, pyrolysis	•	•	•	•	•
Oxidation, oxidative stability	•	•	•	•	•
Content determination, fillers	•	•	•	•	•
Dehydration, moisture	•	•	•	•	•
Reaction profile, kinetics	•		•	•	
Degree of cure, vulcanization	•				
Safety investigations	•	•	•		
Heat of reaction	•		•	•	



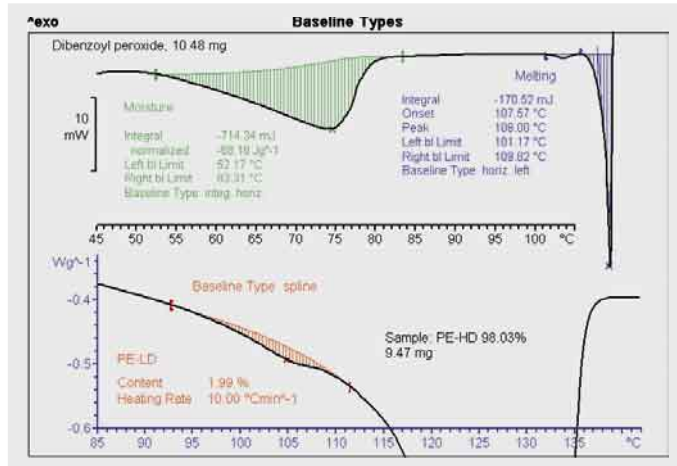
Comparison of TA techniques. The characterization of a material frequently requires the use of different thermal methods. The **STAR^e** software allows curves measured with different techniques, e.g. DSC, TGA and TMA, to be displayed in one clear diagram. This is illustrated in the example of polyamide 6. DSC provides information on the melting behavior, the integral of the melting peak and the enthalpy of melting. TGA analysis allows the moisture content (1st step), the polymer content (2nd step) and the residue at 520 °C (inorganic additives, ash) to be determined. The TMA curve indicates the softening point (onset).



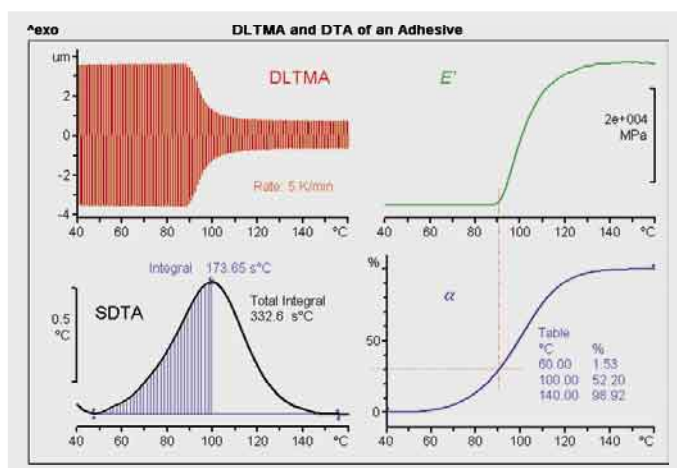
Expansion of composites. TMA measures the change in thickness of a sample as a function of temperature. The TMA curve of the printed circuit board measured shows a sudden change of slope at about 100 °C. The material exhibits a glass transition in this region. The glass transition temperature is determined as the point at which the tangents drawn before and after the glass transition intersect. The thermal expansion coefficient can be calculated from the derivative of the TMA curve.



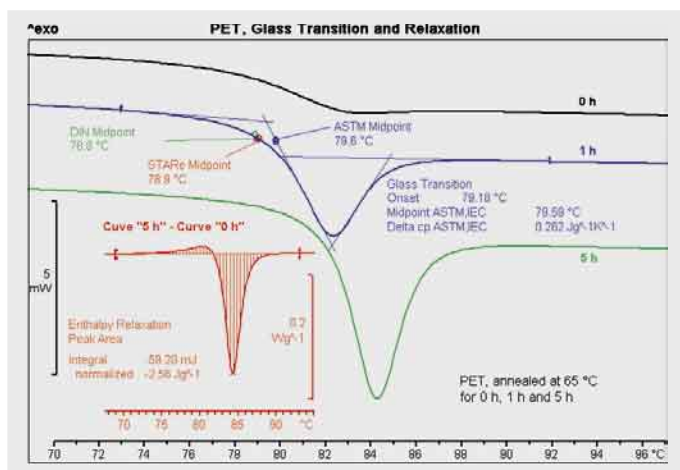
Evolved Gas Analysis. The combination of TGA with a gas analyzer provides not only quantitative data from the TGA but also qualitative information concerning the gaseous products evolved on heating. The **STAR**® software can import data from a mass spectrometer or an FTIR spectrometer and display it together with the TGA curves. This often allows a better interpretation of the TGA weight loss steps. This is illustrated in the example of acetylsalicylic acid, where the DTG (derivative of the TGA curve) and SDTA curves are compared with selected fragment ion MS curves. The SDTA curve indicates a melting peak with an onset at 133.6 °C. The m/z 43 and 60 ion curves show that decomposition of acetylsalicylic acid already begins in the melting region (from 133.6 °C onward) and confirms that acetic acid is the main decomposition product.



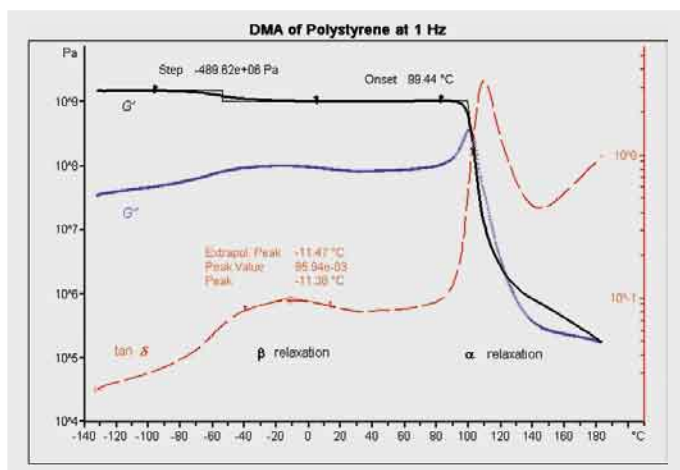
Baselines types. The optimum choice of the baseline is of paramount importance when the area under a DSC curve is integrated to determine the enthalpy of a reaction or a transition. The **STAR**® software includes nine different types of baseline. The one you choose depends on whether changes in heat capacity occur or whether different effects overlap. Use of the correct baseline makes it possible to determine a small amount of PE-LD present as an additive in high density polyethylene (lower curve). The melting area of the PE-LD is integrated using the "spline" baseline type and compared with the total area. Another type of baseline proportional to conversion ("integ. horiz.") is used to determine the loss of moisture from dibenzoyl peroxide (upper curve). In the final step (melting with decomposition) the "horiz. left" baseline type, a horizontal line drawn from the left, is used.



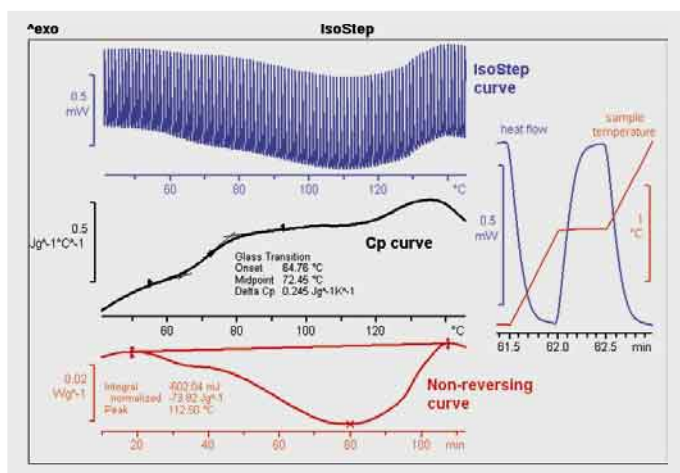
DLTMA and DTA of an adhesive. Adhesives and other thermosets are processed in a low viscosity state and then cured. During the cross-linking reaction, heat is evolved and the viscosity increases. These changes can be measured in the TMA/SDTA840 using simultaneous DTA and DLTMA in the bending mode. To do this, the liquid adhesive is applied to the surface of a razor blade. The DLTMA curve records the change in the bending of the razor blade as a result of increased cross-linking of the adhesive on heating. From this data, the **STAR**® software calculates the change in Young's modulus (E'). The reaction is simultaneously measured by SDTA. Partial integration of the exothermic curing peak allows a conversion curve (α) to be calculated for the reaction. Comparison of the Young's modulus and conversion curves shows that the adhesive becomes appreciably stiffer from about 30 % conversion onward.



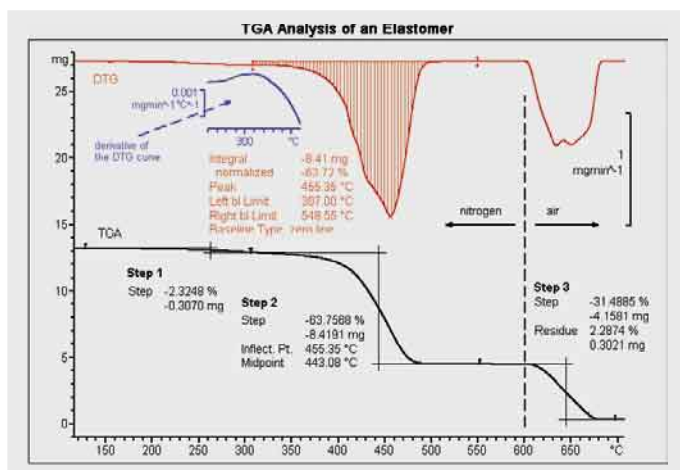
Glass transition and relaxation of PET. A glass transition is often accompanied by enthalpy relaxation. This effect provides information on the thermal history of a material and is illustrated in the following measurements of PET. The samples measured differed only in the time for which they were annealed. The longer the annealing time, the more pronounced the enthalpy relaxation peak. The STAR[®] software allows the use of several different methods to evaluate the glass transition. The relaxation enthalpy can be determined by integrating the difference curve obtained by subtracting the curve of the sample with no annealing from that of the current measurement curve (in this example, the curve of the sample after annealing for 5 hours).



DMA of polystyrene. Relaxation regions manifest themselves in DMA curves as steps (in the storage modulus) or as peaks (in the loss modulus and $\tan \delta$). The changes that occur in these quantities often cover several orders of magnitude. On a linear scale, steps or peaks at low values are often difficult to see. For this reason, DMA curves are usually displayed on a logarithmic ordinate scale. In the example of polystyrene, the glass transition at about 100 °C (onset temperature, G') and β relaxation at about -10 °C (peak temperature, $\tan \delta$) can be identified. Usually a DMA evaluation displays several curves. Clear presentation and identification of the various curves is therefore of utmost importance.



IsoStep™. The temperature program in the IsoStep™ DSC measurement technique consists of a series of alternate isothermal and heating segments. A small section of the temperature program and the corresponding heat flow is shown on an expanded scale in the right part of the diagram. The heat capacity of the sample (middle curve) is calculated from the actual measurement curve (uppermost curve). The non-reversing curve contains information relating to transitions and reactions (lowermost curve). In this example, a pharmaceutical substance was measured in an open crucible. The non-reversing curve characterizes the vaporization of the water contained in the sample. The heat capacity curve shows a glass transition at about 72 °C. In conventional DSC, the glass transition is overlapped by the vaporization peak and cannot be identified. The standard evaluation possibilities available for glass transitions and peaks can also be applied to the calculated curves.



TGA content determination. A frequent application of TGA is content determination. Usually, several weight loss steps are measured as shown in the example of an elastomer. The first part of the measurement is performed under inert atmosphere. The first weight loss step is due to the vaporization of volatile compounds such as plasticizers. After this the polymer undergoes pyrolysis. The corresponding step height relates to the polymer content. From 600 °C onward, air is used as a reactive gas. The carbon black added as filler burns and inorganic constituents remain behind as a residue. Content determination is performed by evaluating the various steps. The separation of steps can often be improved by using the first derivative curve (DTG curve). If this is not sufficient, the derivative of the DTG curve (blue curve) can be employed. Peak evaluation of DTG curves can also be used for content determination.

Software options	requires
Experiment Window	Method Window
Install Plus	–
User Rights	Install Plus
21 CFR 11 Compliance	Install Plus
Server Mode	Install Plus, Concurrent Users
Concurrent Users	Server Mode
Module options:	
Multimodule Operation	an additional interface card with more than 2 modules
Online Evaluations	–
Routine Window	(includes a simple numeric method and experiment editor)
Method options:	
Method Window	–
Conditional Experiment Termination	Method Window
Relative Loop	Method Window
MaxRes	Method Window
Evaluation options:	
DSC Evaluations	–
TGA Evaluations	–
TMA Evaluations	–
DMA Evaluations	–
Mathematics	–
Automatic Evaluations and Validation	–
Specific Heat	–
DOS File Import	–
DSC Purity	–
Kinetics, n^{th} order	DSC or TGA or TMA Evaluations
Model Free Kinetics	DSC or TGA or TMA Evaluations
Advanced Model Free Kinetics	DSC or TGA or TMA Evaluations
IsoStep	Method Window, Relative Loop
ADSC	Method Window, Relative Loop
ADSC c_p	Method Window, Relative Loop
Applicational database	–

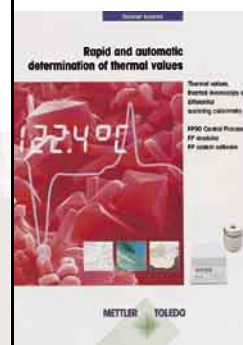


UserCom

Regular information concerning TA Tips, News and applications.

Collected Applications

Specialist applications booklets: Food, Pharmaceuticals, Thermoplastics, Elastomers, EGA.



Ask for our product information on the subject of material characterization

We offer a large selection of system combinations for the determination of thermal values such as melting, boiling, dropping and cloud points. Different measuring modules (DSC, TGA, TMA, TOA) and software are available for thermal analysis.



Quality certificate. Development, production and testing according to ISO9001. Environmental management system according to ISO14001.



Worldwide service. Our extensive service network is among the best in the world and ensures maximum availability and service life of your product.



European conformity. The CE conformity mark provides you with the assurance that our products comply with the most recent EU directives.



On the Internet. You will quickly find lots of essential information about our products, our services, and our company at <http://www.mt.com>

This brochure is printed on environmentally friendly paper.



Mettler-Toledo GmbH, Analytical

Sonnenbergstrasse 74, CH-8603 Schwerzenbach, Switzerland
Tel. 01 806 77 11, Fax 01 806 73 50
www.mt.com/ta