

RheoWin® Software for HAAKE Viscometers and Rheometers



ThermoHaake

RheoWin®

Windows Software

RheoWin is a 32 bit application designed for **Windows '95/'98/ME or Windows NT/2000/XP**. It supports the Windows '95/'98 features such as drag and drop and right mouse clicking. It is a software designed for powerful operating systems because of its 32 bit architecture.

Easy to learn

RheoWin follows the style and convention of **Microsoft Office** which makes the Thermo Haake software look familiar on its first usage. The toolbar and the arrangement of the menu items have the meaning and usage according to the Microsoft convention realized in the Microsoft Office software package.

Networking

Network compatibility is a necessity when many different departments in an organization share data using a management information system (MIS) or a laboratory data system (LIMS). RheoWin can be easily integrated into existing networks to make rheological data quickly accessible by different users.

Multitasking

RheoWin controls a rheometer and simultaneously evaluates data using different software applications or send data to output devices like printers or plotters. RheoWin can also run several viscometers and rheometers at the same time with different test procedures from one computer. The limitations are only dictated by the PC hardware (number of COM ports, processor speed, memory).

Hardware

The requirements for RheoWin are simply to have the operating system Windows NT/2000/XP or Windows '95/'98/ME installed.

To run the rheometer one free COM port is required. Multitasking of several instruments requires the appropriate number of ports to connect all devices.



Rheometers and Viscometers

Rheometer and Viscometer

RheoWin is a modular software which can be upgraded whenever new rheometer hardware is available. It uses the “software driver” concept where individual device drivers contain the code and characteristic values to adapt new instruments. Drivers are available for all Thermo Haake rheometers RS and RT as well as for the Viscotester 550. RheoWin even supports no longer manufactured instruments like RS100, RS50, RT10 or VT500.

Temperature controller

The “software driver” concept is advantageous for the vast variety of temperature control units available from Thermo Haake. All traditional circulators as well as modern Peltier or electrical heated systems are supported. If a new device becomes available after the software has been installed it requires only a new driver to connect it. This makes the software adaptable for the future.

External devices

Rheometry is no longer carried out with one test parameter alone. Modern techniques research rheology under the influence of other parameters. RheoWin can control and read external devices to run a combined test and present the data.

External devices include UV light sources (UV curing), voltage supply units (Electro rheology), balances to monitor the mass flow of powder relays to switch pumps (pressure system).

Remote diagnostics

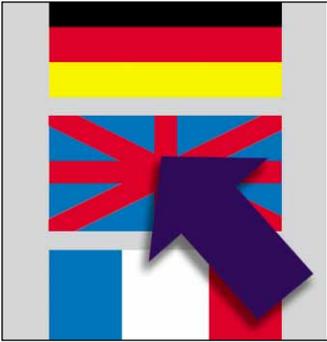
If problems arise during measurements money is wasted for a service engineer or the response of a hot line. On-line connection by modem can guide the operator to set up new test procedures, new measuring systems or to diagnose test problems by telephone.

Thermo Haake application and service engineers can be contacted for help by E-mail day and night.



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RheoWin® features



Multilingual

RheoWin is one of the few Windows software packages where one can measure rheological properties in one dialog language and send test results to other countries in their language just at the click of a button without installing a different version. RheoWin supports the languages German, English, French, Spanish, Japanese and is equipped to include more.



GLP and ISO 9000

Accepted regulations like GLP and ISO 9000 require defined methods in QC and prove how the data has been created. Traceability of test results and calibration of an instrument can be achieved under password protection and recorded in a logbook.

Every step during a measurement carried out by registered users can be monitored, played back and filed .



Visual help

Experienced computer users know that help files can be a jungle when it comes to finding helpful advice. RheoWin provides case sensitive help by the click of the right mouse as

video clip or text explanation. Related explanations to rheology or how to manual is available on separate application reports.



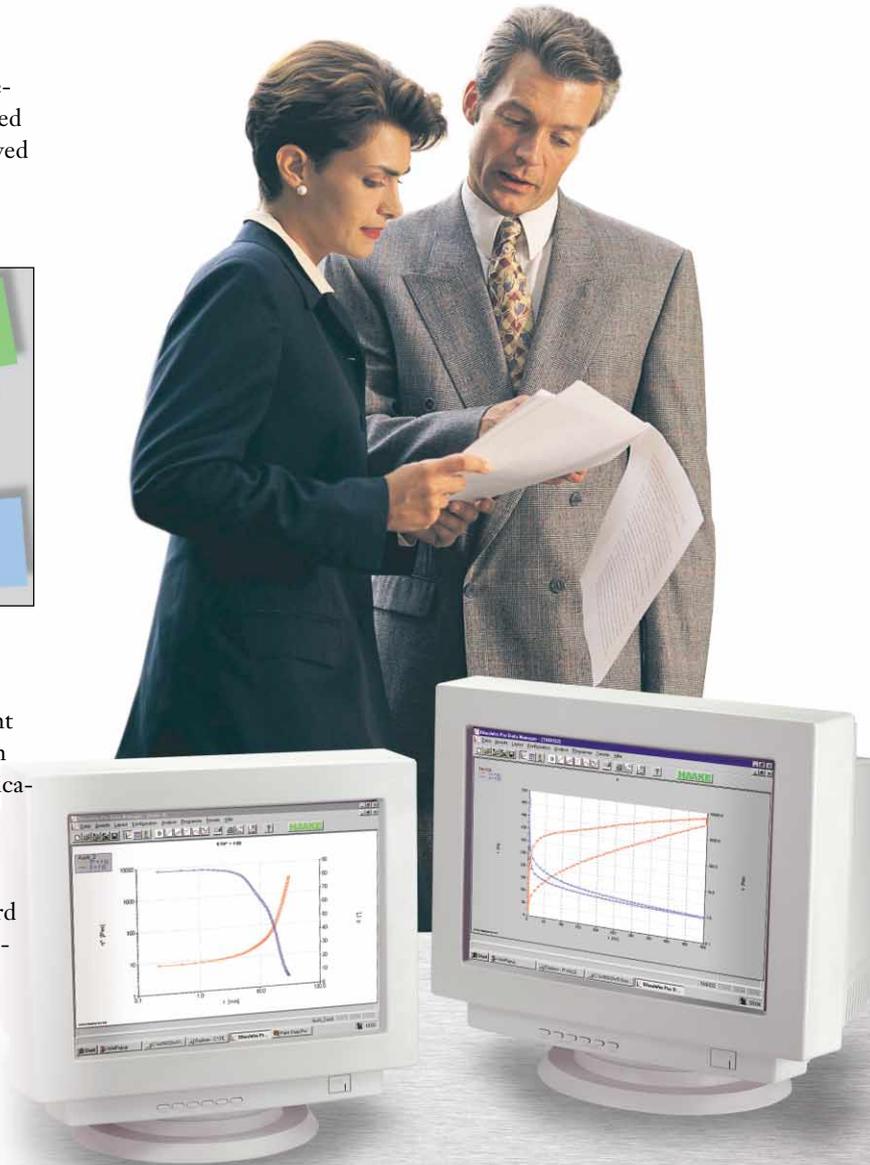
RheoWizard®

For most laboratories rheometry is just one of many tests to be performed. To make even occasional sessions a complete success, RheoWizard helps to set up new test procedures and makes suggestions for best data presentation and analysis. It will warn the user if the instrument is forced to run measurements at its limits where errors are usually higher than expected.

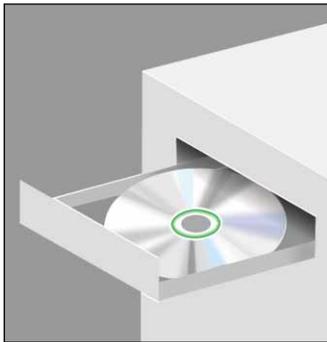


User level

Different users have different needs and expectations when using a software. R&D applications need the full power of a software package but QC environments require that only predefined and password protected procedures are accessible. RheoWin allows to select user levels such as R&D, development, QC, service and demo mode.

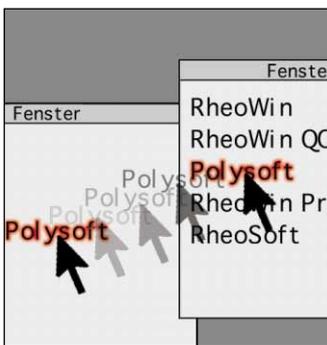


RheoWin® features



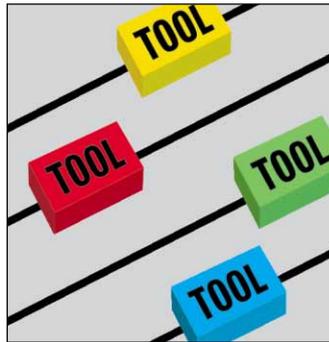
Installation

The installation of RheoWin follows the Windows procedures. The software is automatically registered by the operating system and can be completely removed with Windows uninstall if desired. All RheoWin drivers and support programs are found in the RheoWin directory and not spread out in different folders. Removing the program folder puts the computer in the same state as before (except registry, font).



Drag and drop

Drag and drop with the left mouse and the options list with the right mouse button speed up the operation of RheoWin. There is no searching in hidden windows for required items; just click the item at the toolbar, drag an icon where you need it or use the right click to have a quick overview of the options and properties of an item.

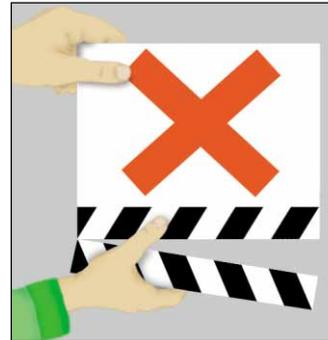


Composing new tests

RheoWin can run predefined procedures from the desktop or within the software. New tests can be easily added by the operator based on given templates and jobs. A template holds all functions and routines but no parameter settings. To make a job out of a template the test parameter (shear rate, test time...) have to be filled in and the result can be stored as a JOB. Likewise a proven JOB can be saved as a new template with "Save As".

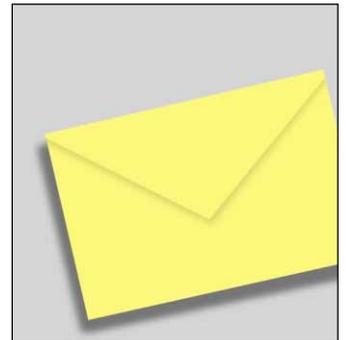
Edit a running test

When a measurement is in progress the behavior of the flu-



ids reaction can be immediately observed. If the material's response shows unexpected results or the timing of a test needs to

be changed (curing test), the parameter settings of the following test element can be modified. All items of a procedure which have not been run or started can be altered.



Messages

Operators using the rheometer only occasionally may need more explanations during a test run or should be reminded on special actions to be performed manually. RheoWin executes user defined messages as text or sound at relevant stages and waits for a confirmation.

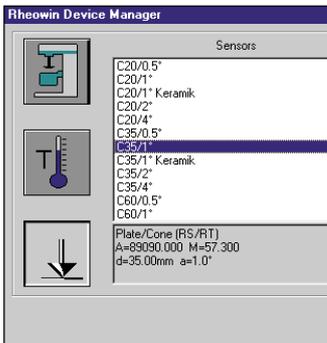


Performance

The software performs its task with is three built-in managers: “Device Manager” - “Job Manager” - “Data Manager”

Device Manager

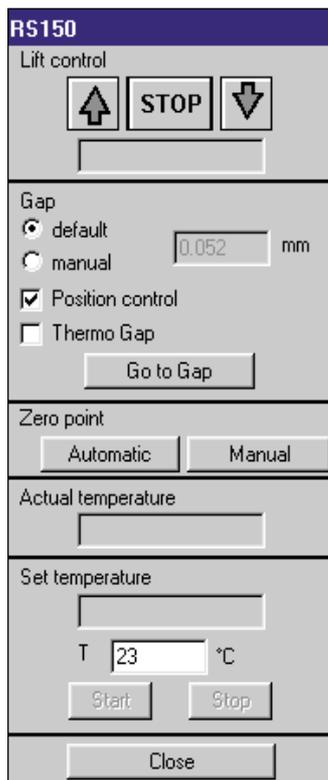
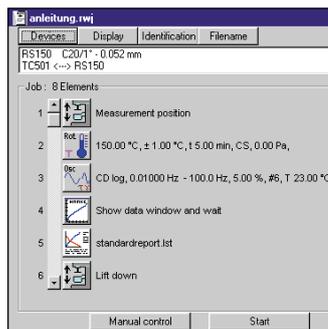
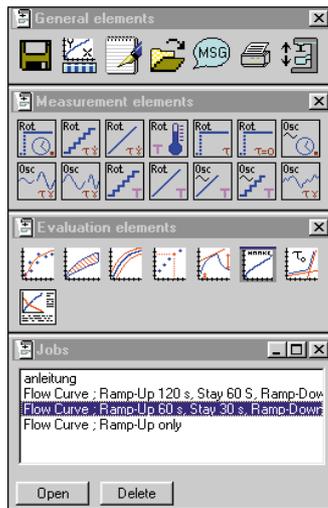
The Device Manager organizes all devices connected to the computer and used by RheoWin. This part is used primarily during the initial setup or occasional modifications to tailor a special task. Thermo Haake rheometers and viscometers can be installed under alias names and options activated or locked. Different setups can be stored with alias names to give easy access to the devices. The same is true for all Thermocontrollers and measuring systems. The data entered is then available to run a test with the Job Manager.



Job Manager

The Job Manager allows the composition of new tests or runs predefined procedures. Its graphical editor makes it easy to set up a new experiment based on individual elements which are loaded with “drag & drop”.

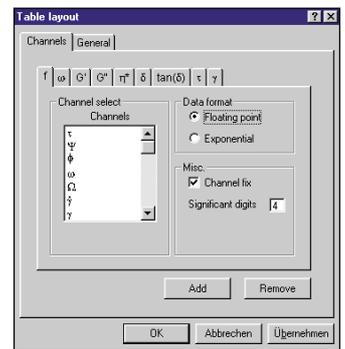
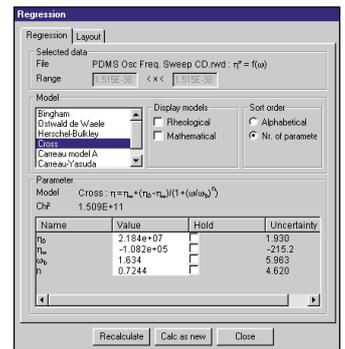
A test usually starts with the **preparation** based on “General elements” such as the relevant identification of a sample, instructions for the user, notes from observations before starting the test, special



graphical views and of course loading sample. Then the **test methods** are selected from the “Measurement elements” panel and the required parameters entered. Combinations of different tests can be selected sequentially with pauses or specific data evaluations in between. On-line **data evaluation** with complete procedures (Yield point determination, regression analysis, Thixotropy calculation, data interpolation, In/out of specs determination with a reference curve, creep analysis and manual graphical representation) gives meaningful data by the press of a button. The comfortable **data output** functions (Save data, Print data and Print reports) makes it easy for occasional users to create good data and is a time saver for routine testing.

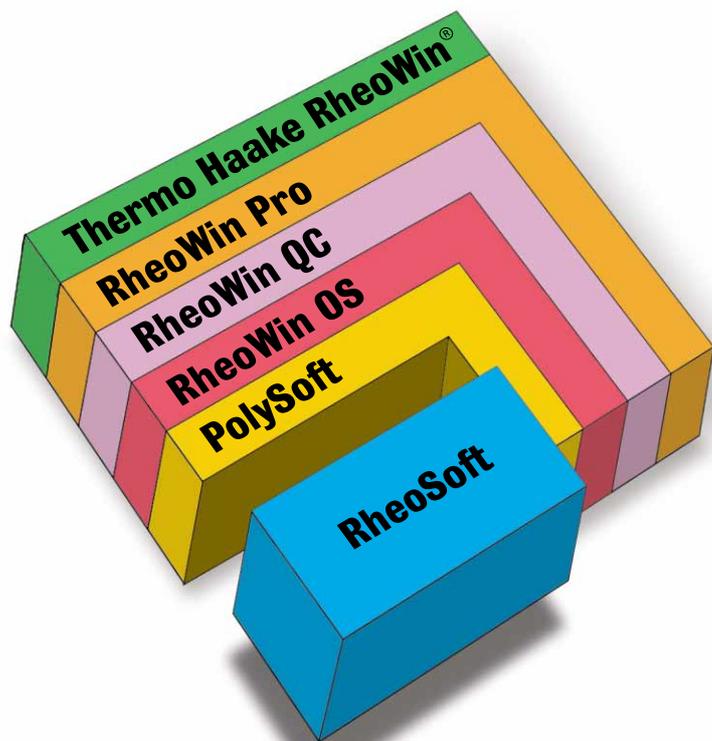
Data Manager

To complete data evaluation procedures from the Job manager, the Data manager can handle individual tests or data points. The test result is displayed as a **data table** like a spread sheet based on templates or set according to your special liking. Data points / rows can be altered, erased or added. The complete or marked parts of the spread sheet can be exported to Excel or other programs with “cut & paste”. The graph is plotted based on default settings, selected templates or individual preferences. Text can be added to explain results or analysis and positioned at meaningful places. Finished graphs can be saved as a template for future evaluations, as graph Meta file or output to a printer. To characterize a measurement the data can be analyzed with regressions, Thixotropy calculation, Creep



analysis or yield stress determination. If data is not available at specific set points, the data interpolation gives the missing values. Data overlay is used to compare results from different samples to check quality or deviations from a master product. If the actual worksheet has been arranged successfully, the complete workspace can be saved as page and re-loaded at any time to continue data evaluation.

Plug-in Programs



RheoWin can include other software packages which may be needed during a rheological session such as the Thermo Haake PolySoft, Microsoft

calculator or a text editor. The program name and the file location entered in RheoWin allows the start a new software.

RheoSoft

RheoSoft is a dedicated software to completely evaluate data from polymers and related materials. It contains four special kernels embedded in a mathematically oriented 32 bit Windows software:

Time temperature superposition

TTS is an accepted procedure to extend the often limited measuring window of a rheometer. The software can automatically shift time, frequency and temperature based data in horizontal (time) and vertical (density) direction. The software outputs the shift factors aT , bT , the Arrhenius activation energy and the material constants $c1$ and $c2$ from the

WLF equation. These results can be used to predict the material behavior at temperatures which could not be applied to save time and manpower.

Spectra calculation

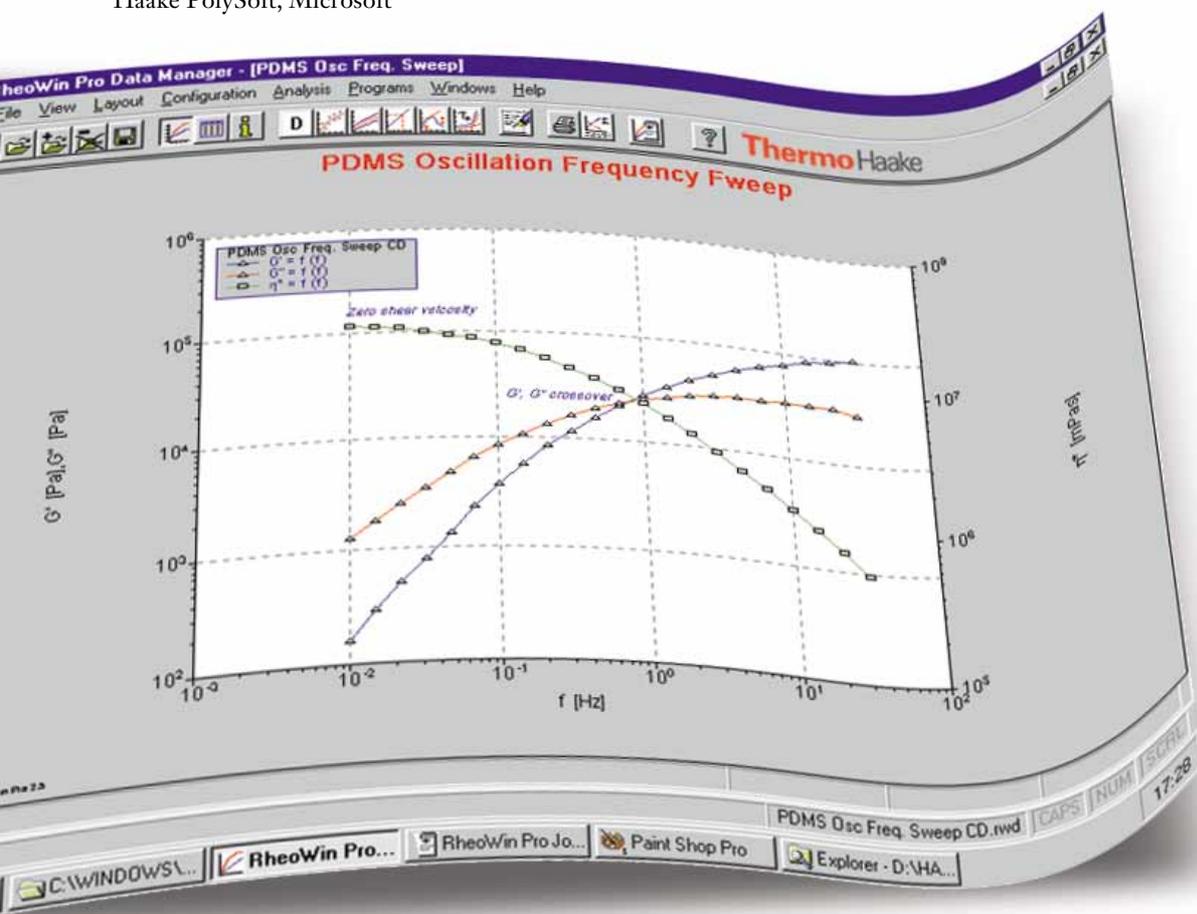
The spectra delivers the complete material information which is the basis for many other calculations and predictions. This allows to measure a material with the most suitable method and calculate other required data by the click of a button. A special graphical representation $H(\lambda)^*$ λ vs. λ gives the first information of the qualitative Molecular Weight Distribution of the polymer tested.

MWD calculation

results in the quantitative Molecular Weight Distribution based on the DOI Edwards theory for linear polymers. The benefit of this method is that it can use existing material data from the polymer in the state of the melt thus avoiding extra testing time with the traditional solvent based methods and their specific error sources.

Data handling

RheoSoft can load data from Thermo Haake rheometers (DOS, RheoWin) and imports ASCII data from other sources. This complete software package can be started directly out of RheoWin.





TemperatureControl



Rheology



PolymerTechnology



ThermalAnalysis

Thermo Haake

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