StabNet

Tutorial

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Although all the information given in this documentation has been checked with great care, errors cannot be entirely excluded. Should you notice any mistakes please send us your comments using the address given above.

Documentation in additional languages can be found on *http://documents.metrohm.com*.

Table of contents

1 Introduction

1.1 Structure of the tutorial

The present tutorial guides you through your first steps using the **StabNet** software. You will be introduced to the most important operating elements based on a determination of the induction time of oils and fats using an 892 Professional Rancimat or 893 Professional Biodiesel Rancimat and the determination of the stability time of PVC using an 895 Professional PVC Thermomat.

The tutorial is arranged in three parts:

- Carrying out a simple determination
- Carrying out a determination with advanced functions
- Editing a determination and printing a report

1.2 Program description

StabNet comprises the following program parts:

Workplace

- Opening workplaces, selecting methods
- Entering sample data
- Starting single determinations and statistically linked determinations
- Displaying live curves

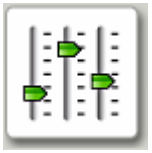
Database

- Opening/closing databases
- Managing determinations
- Reprocessing determinations
- Creating reports

Method

- Creating a new method
- Editing an existing method
- Managing methods
- Result definition

Configuration



- Configuration of devices, sensors and temperature coefficients
- User administration
- Security settings
- Program administration
- Audit Trail

1.3 Symbols and conventions

The following symbols and formatting are used in this documentation:

1	**Instruction step** Carry out these steps in the sequence shown.
Method	**Dialog text, parameters** in the software
File ▸ New ▸	Menu or menu item
[Next]	**Buttons** or **keys**
	**Note** This symbol marks additional information and tips.

2 Simple determination

You will be introduced to the basics of **StabNet** in this chapter.

- Configuring the instrument
- Creating, testing and saving a method
- Preparing the determination
- Carrying out the determination
- Modifying sample data live

2.1 Configuration

Metrohm instruments connected to the PC via a USB connector are detected automatically when the program starts.

All instruments, sensors and temperature coefficients used in a method and at the workplace are defined in the **Configuration** program part. The definition of the instrument is enough for carrying out a simple determination. The following Metrohm instruments are detected automatically when the program starts:

- 892 Professional Rancimat
- 893 Professional Biodiesel Rancimat
- 895 Professional PVC Thermomat

Sensors (conductivity and temperature sensors) and temperature coefficients (Arrhenius and Q_{10}) have to be created. However, this is only necessary if one of the advanced functions is to be used *(see Chapter 3, page 21)*.

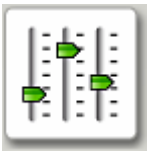
2.1.1 Starting the software

Note

Instruments are detected automatically and can be monitored by **StabNet**.

Proceed as follows to start the **StabNet** program:

1. Click on the **StabNet** icon on the desktop.
2. Enter a user name and password (if defined) and click on **[OK]**.



3 Click on the **[Configuration]** symbol.

The dialog window for the **Configuration** program part opens. A total of three subwindows can be displayed:

Devices	Display of automatically detected instruments.
Sensors	Display of data for all defined conductivity and temperature sensors.
Temperature coefficients	Display of Arrhenius and Q_{10} temperature coefficients.

2.1.2 Configuring the instrument

Proceed as follows if you are starting the instrument for the first time:

1 **Connecting the instrument**

Connect the instrument to the PC using a USB cable.

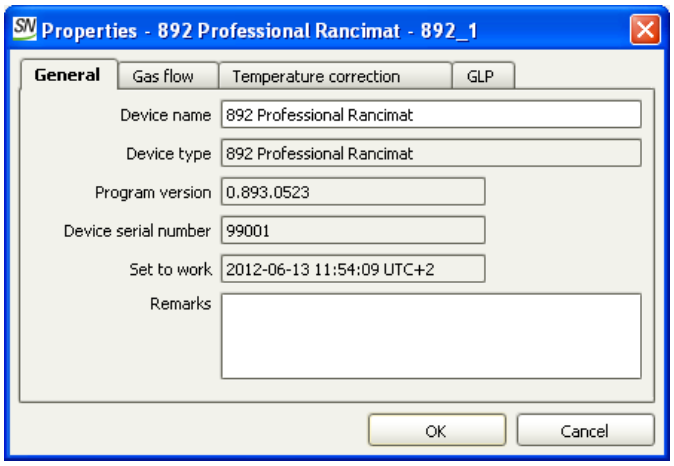
2 **Switching on the instrument**

The parameters of the instrument are detected automatically.

3 **Saving the instrument in the table**

Confirm the message with **[Yes]**.

The **Properties** dialog window opens.



4 Enter the instrument name

On the **General** tab in the **Device name** field, enter a name for the instrument and close the dialog window with **[OK]**.

The instrument name is used for identifying the instrument. It is also shown on the device display.

5 Selecting columns (optional)

- Open the **Column display** dialog window in the **Devices** sub-window using the **Edit ▸ Column display...** menu.
- Select a column in the **Columns available** area.
- Move the selected column to the **Columns displayed** area using the >> button.

The column is shown in the device table.

2.2 Creating a method

A method comprises all parameters for carrying out and evaluating a determination. These include:

- Measuring parameters (temperature, gas flow)
- Parameters for evaluating the measurement curve and the result to be calculated

The creation of a method capable of being run using a predefined method template is described in this chapter.

2.2.1 Creating a new method

Proceed as follows to create a method:

1 Click on the symbol of the **Method** program part.

2 Open the **New method** dialog window using the **File ▸ New...** menu.

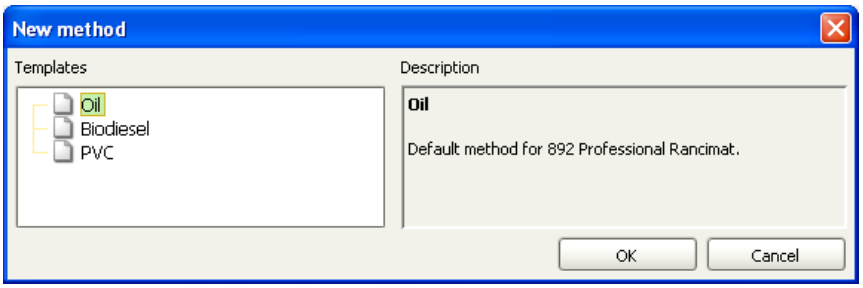


Table 1 Method template parameters

	Oil	Biodiesel	PVC
Sample temperature	120 °C	110 °C	200 °C
Temperature correction	1.6 °C	0.9 °C	0.8 °C
Gas flow	20 L/h	10 L/h	7 L/h
Stop criteria	Endpoint(s)	Endpoint(s)	Endpoint(s)
Evaluate induction time	yes	yes	no
Evaluation sensitivity	1.0	1.0	—
Evaluate stability time	No	No	Yes
Conductivity change	—	—	50 µS/cm

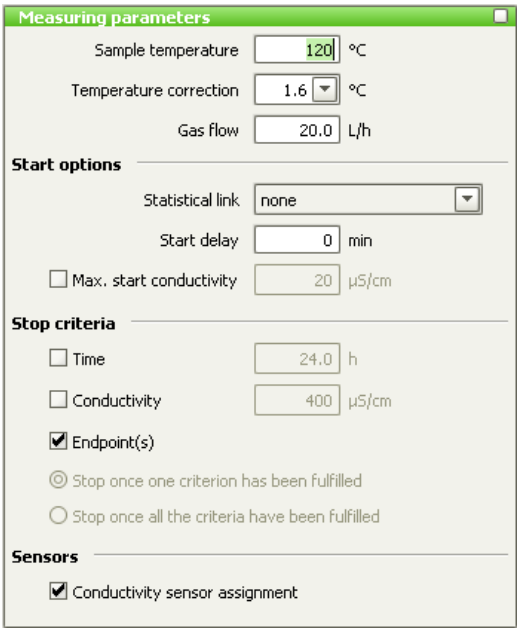
3 Under **Templates**, on the left part of the window, highlight the **Oil** method template and confirm with **[OK]**.

The method template is opened.

4 If necessary, adjust the specifications of the selected method template to the application document (national and international standard, Metrohm Application Bulletin or work) accordingly in the **Measuring parameters**, **Evaluation** and **Properties** subwindows.

Adjusting measuring parameters

The measuring parameters can be adjusted in the **Measuring parameters** subwindow.



The parameters critical for the end result are **Sample temperature**, **Temperature correction** and **Gas flow**. Take **Sample temperature** and **Gas flow** from the corresponding application document. *Table 2* and *Table 3* provide an overview of the relationship between **Temperature correction** and selected **Sample temperature** and **Gas flow**. The values specified in the table are approximate values. More precise work is possible using the "**auto**" **Temperature correction** *(see Chapter 3.2, page 26)*.

The **Start options** affect the start of data recording. The **Stop criteria** define the end of data recording. Here the **Endpoint(s)** parameter relates to the **Induction time** and **Stability time** parameters defined under **Evaluation**.

The use of calibrated conductivity sensors is enabled under **Sensors** *(see Chapter 3.1, page 21)*.

Table 2 Temperature correction values for 892 Professional Rancimat and 893 Professional Biodiesel Rancimat. Condition: 6 g silicone oil, gas = air

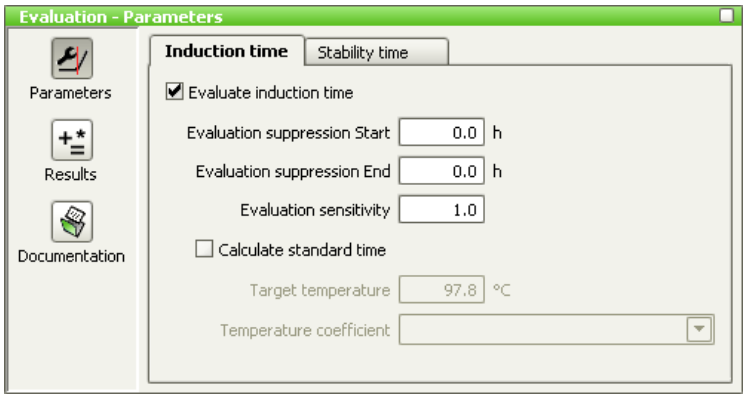
Sample temperature (°C)	Temperature correction value (°C) for gas flow = 10 L/h	Temperature correction value (°C) for gas flow = 20 L/h
80	0.7	1.1
90	0.8	1.3
100	0.8	1.4
110	0.9	1.5
120	1.0	1.6
130	1.1	1.7
140	1.1	1.8
150	1.2	1.9
160	1.2	2.0

Table 3 Temperature correction values for 895 PVC Thermomat. Condition: 5 g silicone oil, gas = nitrogen

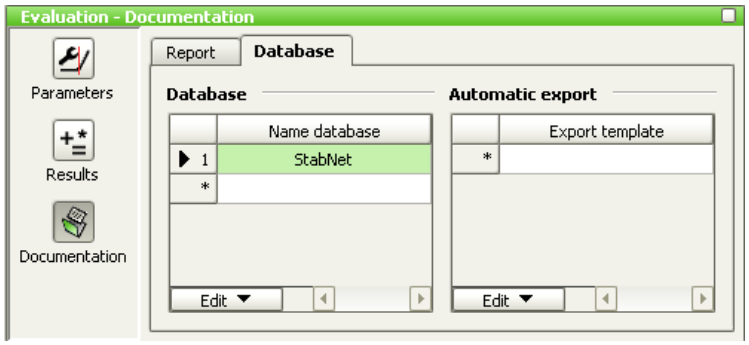
Sample temperature (°C)	Temperature correction value (°C) for gas flow = 7 L/h
160 - 200	0.8

Adjusting the evaluation

The evaluation of **Induction time** and **Stability time** can be enabled in the **Parameters** area of the **Evaluation** subwindow. The evaluation contains both the evaluation of the curve with the configured parameters and the output of the **Induction time** and/or **Stability time** result to the database. Optionally, the **Standard time** can be calculated from the **Induction time** *(see Chapter 4.4, page 49)*. Additional result calculations are not normally required.



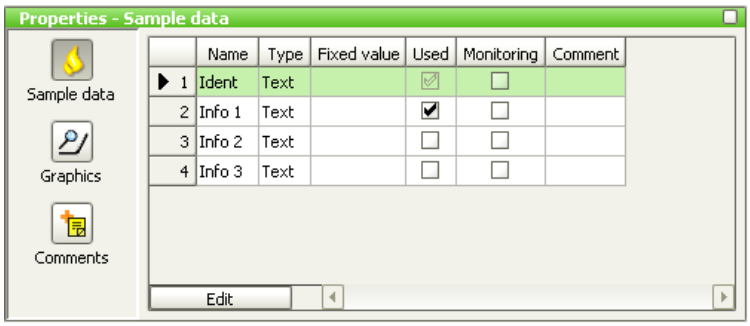
The database where the determinations are stored is defined in the **Documentation** area of the **Evaluation** subwindow. The standard database is called **StabNet**. Additional databases can be defined (*see Online Help: Creating a database*).



Editing properties

Which sample information can be entered in the **Workplace** program part is defined in the **Properties** subwindow in the **Sample data** area. The use of **Info 1** through **Info 3** is optional.

The appearance and scale of the displayed graphics can be defined in the **Graphics** area. These settings affect how the live curve in the **Workplace** program part and the graphics in the **Database** program part are displayed.



2.2.2 Testing a method for plausibility

Proceed as follows to test the method for plausibility before saving:

1. Click on the **File ▸ Method check** menu or the ✔ symbol.
2. Confirm the message with **[OK]**.

   Correct any errors.

2.2.3 Saving a method

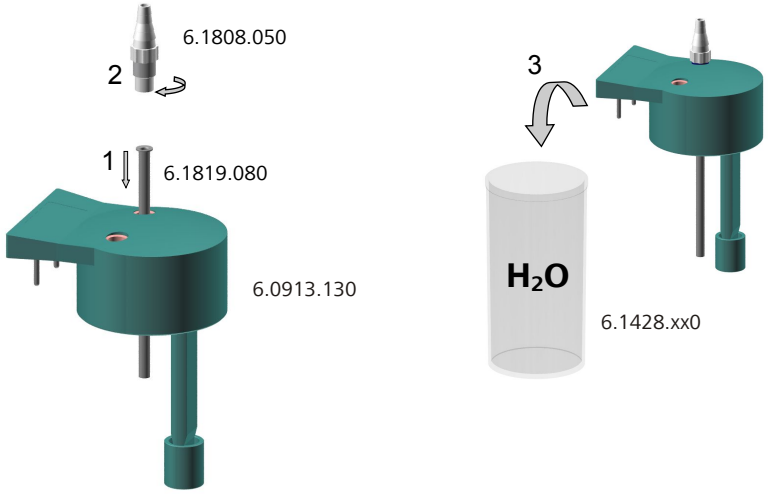
Save the method as follows:

1. Open the **Save method** dialog window using the **File ▸ Save As** menu.
2. In the **Method name** field, enter a name for the method.
3. Click on **[Save]**.

2.3 Preparing the determination

The cleanliness of instrument and accessories parts is an indispensable prerequisite for **reliable, reproducible and correct analysis results**. Even the slightest contamination could catalytically accelerate the oxidative decomposition and lead to completely incorrect results. Therefore, always observe the instructions for use of measuring and reaction vessels in this section.

2.3.1 Mounting the measuring vessel cover



Proceed as follows to mount the measuring vessel cover:

1 Insert the 6.1819.080 PTFE tubing from above into the **In** opening of the 6.0913.130 measuring vessel cover.

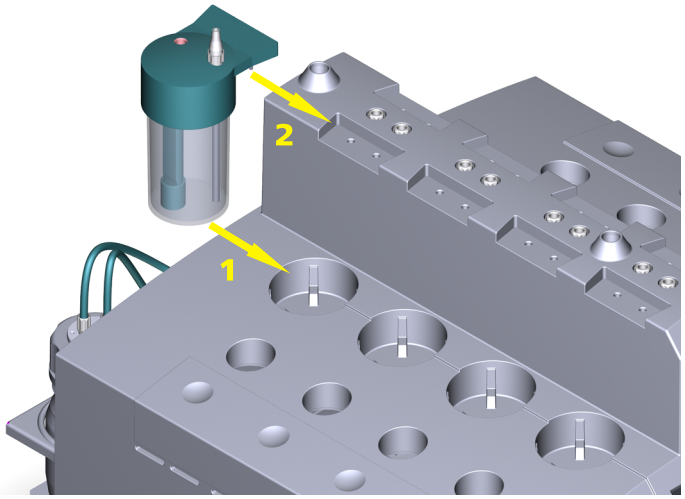
2 Screw the 6.1808.050 M8/olive tubing adapter into the **In** opening of the 6.0913.130 measuring vessel cover.

3 Place the measuring vessel cover with the built-in conductivity measuring cell on the measuring vessel filled with distilled water. The type of measuring vessel depends on the scope of delivery for your instrument.

Note

Given the chemical resistance, a 6.1428.030 measuring vessel made of clear glass has to be used instead of a 6.1428.100 measuring vessel made of polystyrene when measuring biodiesel.

4



Insert the measuring vessel into the opening (1) provided for this purpose in the instrument. While doing so, carefully guide the connector plug for the measuring vessel cover into the electrode connector (2).

2.3.2 Preparing a sample

Note

Use **new reaction vessels and air tubes** for each measurement. Blow the reaction vessels out with nitrogen before use. This removes particles that act as catalysts and cause undesired side reactions.

Liquid samples (e.g. vegetable oil or biodiesel)

Prepare the sample as follows:

1 Place the reaction vessel on a scale using a 6.2628.000 holder for a reaction vessel.

2 Weigh the sample material directly in the reaction vessel. Normally, **3 g** of sample material are used for vegetable oils and **7.5 g** for biodiesel.

Solid, meltable samples (e.g. vegetable fat)

Prepare the sample as follows:

1. Place the reaction vessel on a scale using a 6.2628.000 holder for a reaction vessel.

2. Weigh the sample material directly in the reaction vessel and ensure that the majority of the sample is in the bottom 5 cm of the reaction vessel. Normally, **3 g** of sample material are used for vegetable fat.

Solid samples (e.g. PVC)

Prepare the sample as follows:

1. Place the reaction vessel on a scale using a 6.2628.000 holder for a reaction vessel.

2. If necessary, break the sample material into smaller pieces and weigh it directly in the reaction vessel. Normally, **0.5 g** of sample material is used for PVC.

Samples that cannot be measured directly

Samples containing fat, such as sausages or mayonnaise, cannot be measured directly, but the fats and oils they contain can be used as described above once they are extracted. Please refer to the application documents (Metrohm Application Bulletin or work) for the respective sample preparation.

2.3.3 Mounting the reaction vessel cover

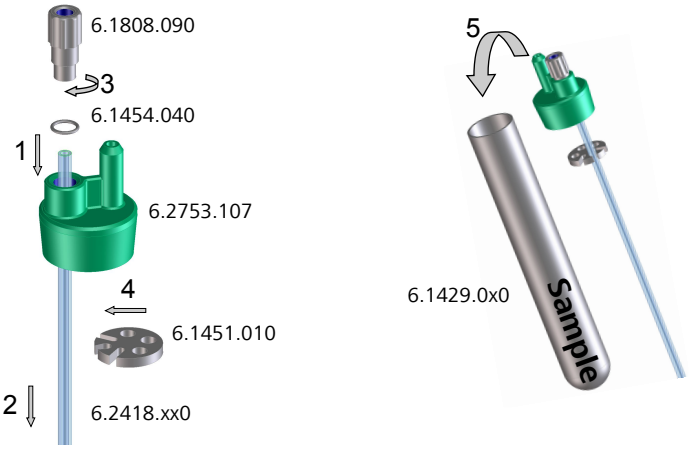


Table 4 Examples for the combination of a reaction vessel + air tube

Sample	Reaction vessel	Air tube
Vegetable oil	6.1429.040	6.2418.100
Biodiesel (according to EN 15751)	6.1429.050	6.2418.130
PVC	6.1429.040	6.2418.120

Proceed as follows to mount the reaction vessel cover:

1 Place the 6.1454.040 O-ring over the upper end of the air tube.

2 Feed the 6.2418.xx0 air tube into the connection of the 6.2753.107 reaction vessel cover from above.

3 Gently screw the 6.1808.090 M8/M6 thread adapter into the connection and, at the same time, press the air tube against the thread adapter. Then fix the air tube onto the reaction vessel cover by firmly tightening the thread adapter.

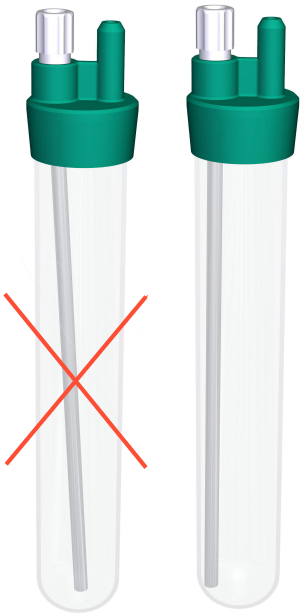
4 *Optional*: If determinations are being carried out with highly foaming samples, clamp the 6.1451.010 foam barrier onto the air tube.

Note

The foam barrier can melt if it projects too deeply into the heating block.

Ensure that the foam barrier is **at least 7 cm** above the base of the reaction vessel.

5 Place the reaction vessel cover on the reaction vessel.



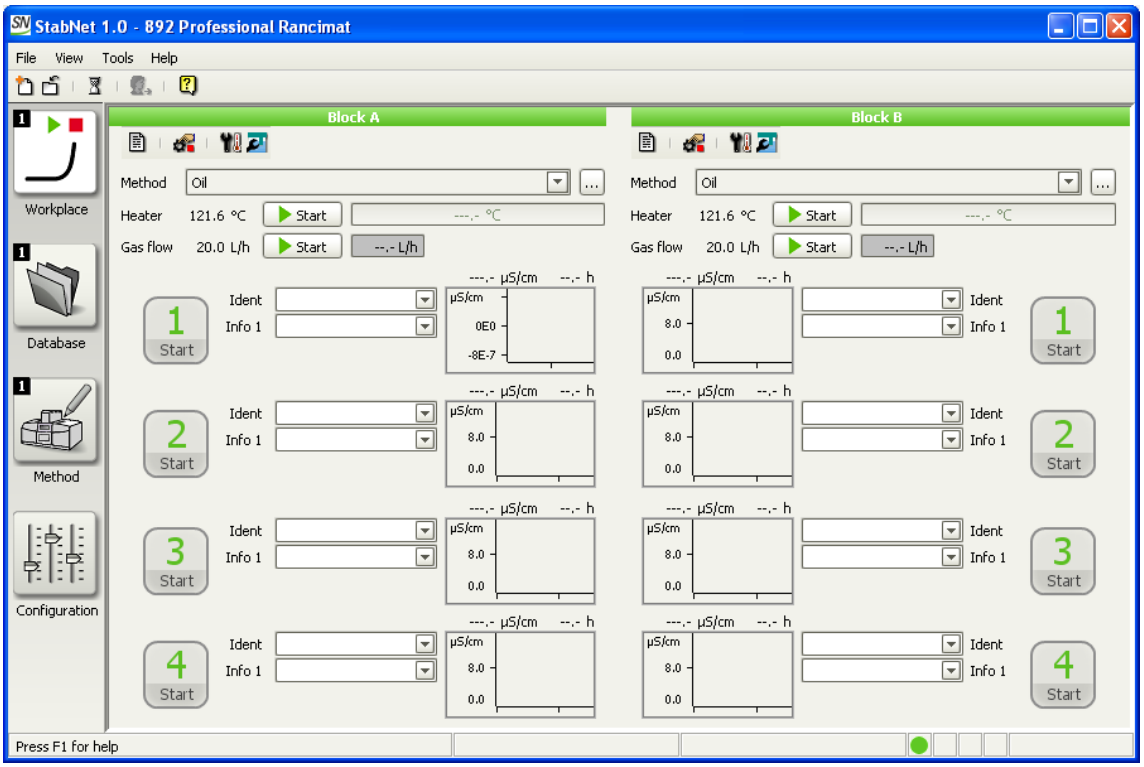
Place the prepared reaction vessel in the 6.2041.190 reaction vessel holder.

2.4 Carrying out a determination

You will learn the following in this chapter:

- How to assign a workplace to an instrument
- How to run a standard method
- How to change sample data in real time

These steps are performed in the **Workplace** program part.



2.4.1 Assigning a workplace

Proceed as follows to assign a workplace to an instrument:

1 Click on the **Workplace** symbol.

2 Open the **New workplace** dialog window using the **File** ▸ **Workplace** ▸ **New...** menu.

3 Select the name for the instrument in the **Device name** field.

4 In the **Color** field, select a color for the title bar of the subwindow and the status icon of the newly opened workplace on the status bar.

5 Confirm with **[OK]**.

2.4.2 Carrying out the determination

Proceed as follows to carry out a determination at position **A1** (the procedure is the same for other positions in block **A** and block **B**):

1 Selecting a method

Click on the symbol under **Block A** in the **Method** field and select a method name for block **A**.

Methods with different temperatures can be selected for Block A and Block B when measuring on both blocks.

2 Starting the heater

Under **Block A**, click the Start button for the heater.

After the heater has been switched on, the current heating block temperature is indicated by a red progress bar.

Heating period to 120 °C: approx. 45 min.

Heating period to 200 °C: approx. 60 min.

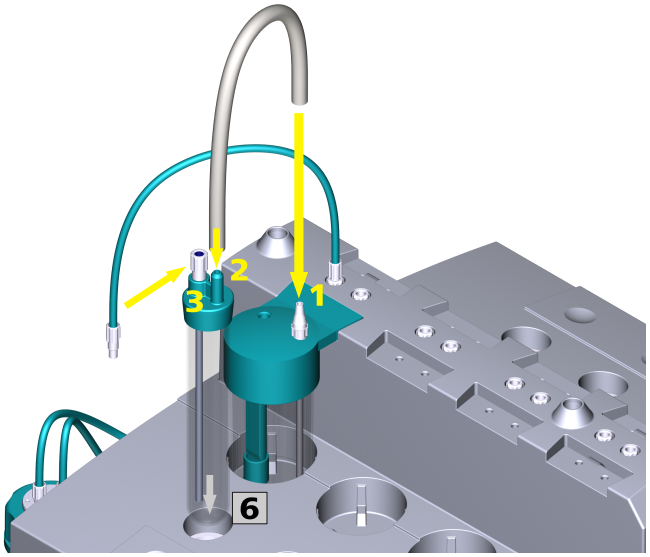
3 Entering sample identification

Enter the name of the sample in the **Ident** field for sample identification.

4 Entering sample information (optional)

Enter additional information about the sample in the **Info #** fields.

5 Connecting reaction vessels



- (1) Connect the 6.1816.010 white silicone tubing (for the 892 Professional Rancimat and 895 Professional PVC Thermomat) or the 6.1839.000 black Iso-Versinic® tubing (893 Professional Bio-diesel Rancimat) to the measuring vessel cover's M8/olive tubing adapter.
- (2) Connect the white silicone tubing or the Iso-Versinic® tubing fastened to the measuring vessel cover to the reaction vessel's tubing connector.
- (3) Screw the 6.1805.080 250 mm FEP tubing fastened to the connector of the Rancimat to the 6.2753.107 reaction vessel's M8/M6 thread adapter.

6 Inserting reaction vessels

Note

The temperature defined in the method has to be reached before you insert the reaction vessels, i.e. the progress bar has to be **green**.

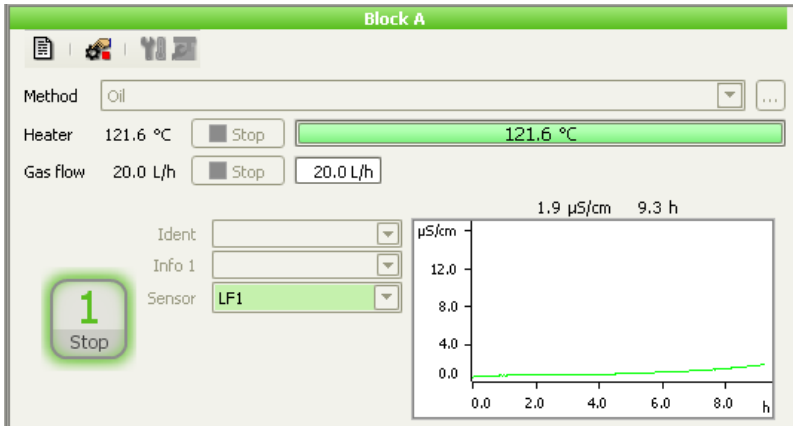
- Seal the unused positions with stoppers or empty reaction vessels for protection against impurities.
- Insert the prepared reaction vessel in measuring position 1 of heating block **A**.

7 **Starting the determination**

Start the determination directly at the instrument or at measuring position 1 using the 

symbol.

A blinking symbol indicates an ongoing measurement. The measured value and time are shown in the live curve.



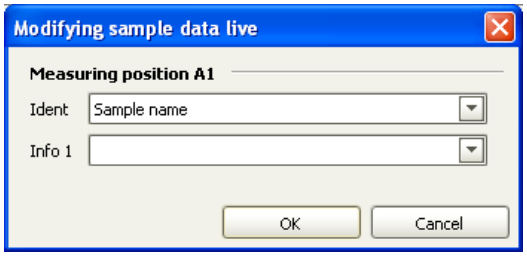
2.4.3 Modifying sample data live

You have the option of modifying the **Ident** and **Info #** sample data for each measuring position in real time during the determination.

Proceed as follows to modify the **Ident** of measuring position **A1**:

1 Right-click in the **Ident** field of measuring position **A1**.

The **Modifying sample data live** dialog window opens.



2 Enter another sample name in the **Ident** field.

3 Confirm with **[OK]**.

The new sample name is entered in the **Ident** field for measuring position **A1**.

3 Determination with advanced functions

3.1 Measuring with calibrated conductivity sensors

The cell constant of the 6.0913.130 conductivity sensor is normally between 1.0 and 1.2. This accuracy is sufficient for an induction time determination since only the shape of the curve is evaluated.

The change in conductivity is measured in absolute terms during a stability time determination (e.g. determining the thermostability of PVC). As a rule, the time until an increase in conductivity of 50 µS/cm is determined. The cell constant for the conductivity electrode being used has to be calibrated in order to be able to measure the conductivity correctly. You need a 6.2324.010 conductivity standard (100 µS/cm) and a thermometer (e.g. 6.2401.010) for this.

Calibrating all of the conductivity sensors used is optional when determining induction time and mandatory when determining stability time.

You will learn the following in this chapter:

- How to define a conductivity sensor in the configuration
- How to enable the conductivity sensor assignment in the method
- How to assign a conductivity sensor to a measuring position in the **Workplace** program part
- How to calibrate a conductivity sensor (how to determine the cell constant using the wizard)

3.1.1 Configuration

3.1.1.1 Starting the software

See Chap. 2.1.1, page 3

3.1.1.2 Configuring the device

See Chap. 2.1.2, page 4

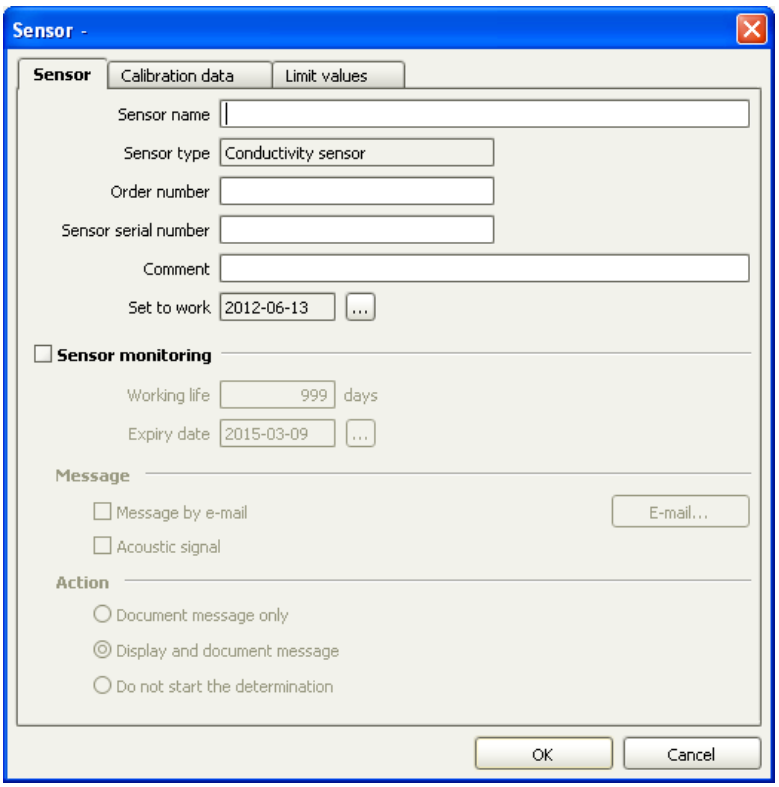
3.1.1.3 Defining a conductivity sensor

Each conductivity sensor has its own cell constant. Therefore, enter each used conductivity sensor in the sensor table. You can define as many conductivity sensors as needed.

Define a conductivity sensor as follows:

1 Editing a sensor

Open the **Sensor** dialog window in the **Sensors** subwindow using the **Edit** ▸ **New...** ▸ **Conductivity sensor** menu.



2 Sensor tab

Make the following entries:

Field	Entry
Sensor name	Conductivity sensor name. This is used for identifying and assigning the sensor. Ensure that the name is easily recognizable and is noted on the corresponding measuring vessel cover in a permanent (non-washable) form.
Sensor type	entered automatically
Order number	optional
Sensor serial number	optional
Comment	optional

Set to work	current date is entered automatically or can be selected with …
Sensor monitoring	optional

3 **Calibration data tab**

An average value of **1.10 cm^{-1}** is specified in the **Cell constant** field. Apply this value.

This value is determined precisely in another step in the **Workplace** program part using a wizard *(see Chapter 3.1.4.1, page 25)*. The calibration data is applied to this tab automatically from there.

4 **Limit value tab**

- Activate the **Cell constant monitoring** box (optional).
- Change the value in the **Lower limit** field as needed.
- Change the value in the **Upper limit** field as needed.

5 Repeat steps **1** through **4** for each required conductivity sensor.

3.1.2 Creating a method

The assignment of sensors to the measuring positions being used has to be enabled for a determination with a calibrated conductivity sensor.

3.1.2.1 Creating a new method

See Chap. 2.2.1, page 6

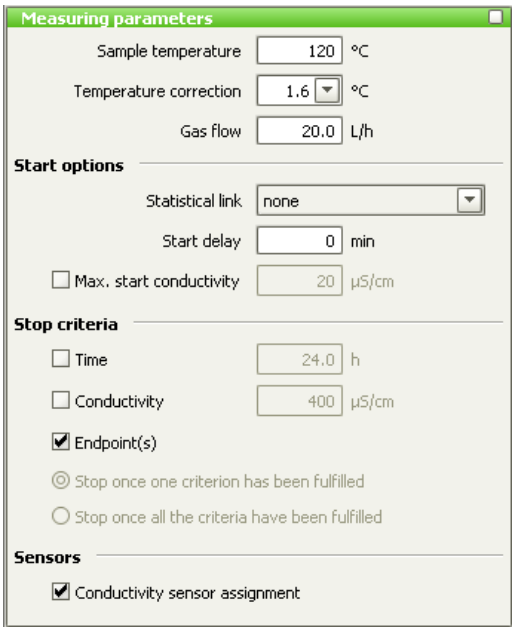
Instead of creating a new method, a method that already exists can also be modified accordingly.

3.1.2.2 Defining parameters

Measuring parameters

You have to enable the conductivity sensor assignment in the method to assign a sensor to a measuring position in the **Workplace** program part. Proceed as follows:

1 Activate the **Conductivity sensor assignment** check box in the **Measuring parameters** subwindow in the **Sensors** area.



3.1.2.3 Testing a method for plausibility

See Chap. 2.2.2, page 10

3.1.2.4 Saving the method

See Chap. 2.2.3, page 10

3.1.3 Assigning a workplace

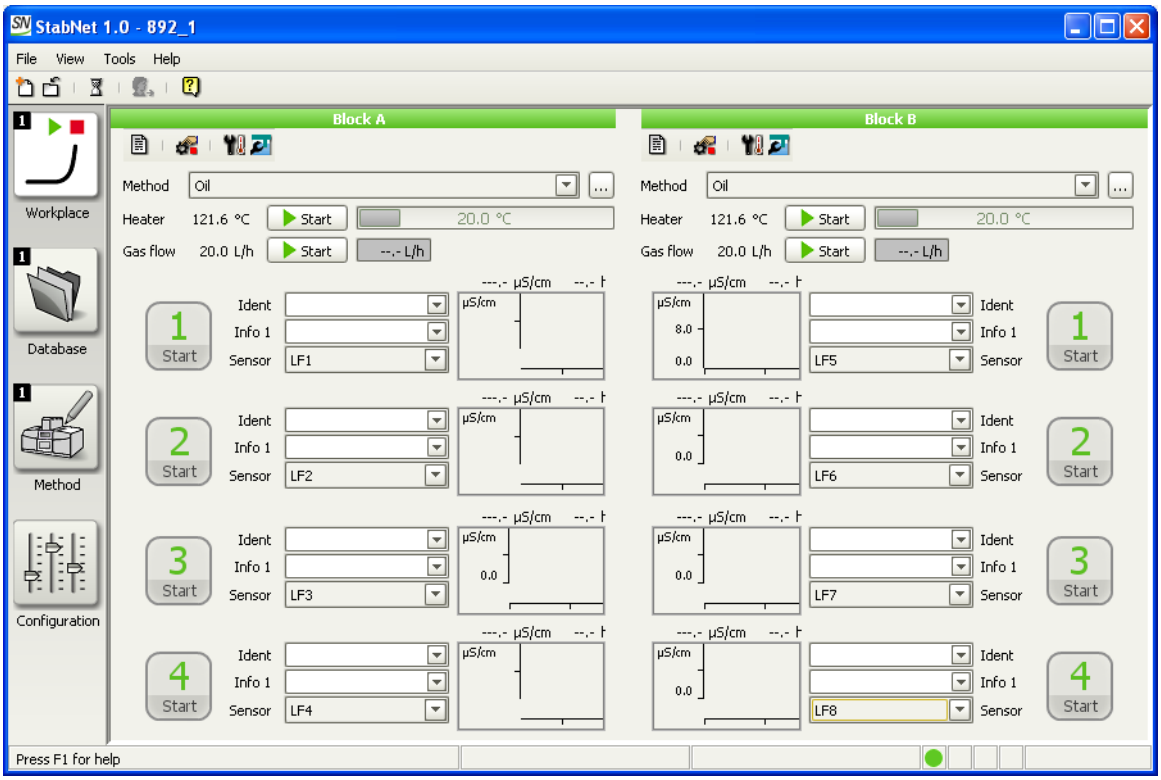
See Chap. 2.4.1, page 16

3.1.4 Carrying out the determination

You will learn the following in this chapter:

- How to determine a cell constant (using a wizard)
- How to carry out a determination using a conductivity sensor

These steps are performed in the **Workplace** program part.



Because the **Conductivity sensor assignment** parameter is enabled for this method, the **Sensor** field also appears for each measuring position. The conductivity sensor used for the respective position has to be selected in this field. All of the conductivity sensors defined in the configuration are available for selection.

3.1.4.1 Determining the cell constant

The cell constant is determined using a wizard. Proceed as follows:

1 Prepare the measuring cell in accordance with *Chap. 2.3.1* but using the 6.2324.010 conductivity standard (100 µS/cm) instead of distilled water in the process.

2 Start the wizard using the **Tools ▸ Determine cell constant... ▸ Block A** menu.

3 Follow the instructions in the wizard step by step.

The newly determined cell constant is entered in the sensor table and on the **Calibration data** tab in the **Configuration** program and saved after pressing **[Save]**.

3.1.4.2 Preparing the determination

See Chap. 2.3, page 10

3.1.4.3 Carrying out the determination

See Chap. 2.4.2, page 17

In addition to the steps listed in *Chap. 2.4.2*, the following step must be performed before starting the determination:

1 Selecting a sensor

Click on the ▼ symbol for measuring position **A1** in the **Sensor** field and select a conductivity sensor.

3.2 Using "auto" temperature correction

The **Temperature correction** parameter is used for compensating for temperature loss. Temperature loss occurs due to the heat transfer from the heating block to the sample and gas flow, which cools the sample. The value for temperature correction depends on the heating block, the sample temperature and the gas flow rate. Correctly determining temperature correction ensures that the sample temperature configured in the method is achieved in the sample.

The "**auto**" temperature correction allows the same method to be used on different heating blocks and an individualized temperature correction to be taken into account for each heating block. The value for the temperature correction is determined using a wizard *(see Chapter 3.2.4.1, page 30)* and is saved in the instrument on the **Temperature correction** tab. You need the 6.5616.100 equipment for determining the temperature correction (for 892 Professional Rancimat and 895 Professional PVC Thermomat) or 6.5616.110 (for 893 Professional Biodiesel Rancimat).

You will learn the following in this chapter:

- How to define a temperature sensor
- How to create a method with automatic temperature correction
- How to carry out a temperature correction determination using the wizard

3.2.1 Configuration

3.2.1.1 Starting the software

See Chap. 2.1.1, page 3

3.2.1.2 Configuring the instrument

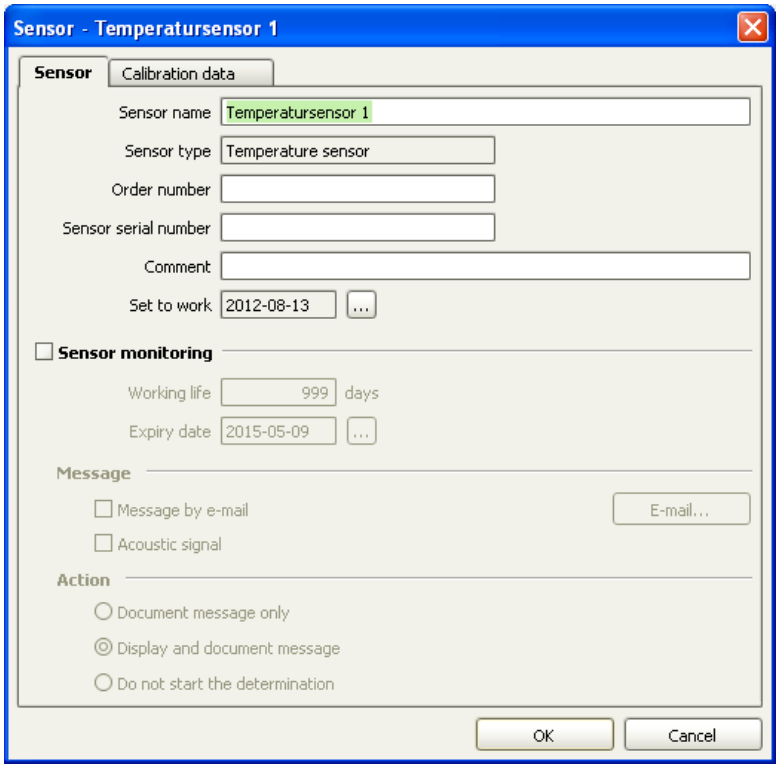
See Chap. 2.1.2, page 4

3.2.1.3 Defining a temperature sensor

Define a temperature sensor as follows:

1 **Editing a sensor**

Open the **Sensor** dialog window in the **Sensors** subwindow using the **Edit** ▸ **New...** ▸ **Temperature sensor** menu.



2 **Sensor tab**

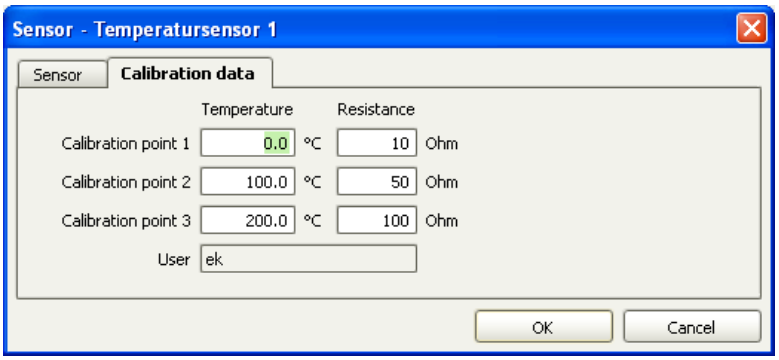
Make the following entries:

Field	Entry
Sensor name	name for the temperature sensor
Sensor type	entered automatically

Order number	optional
Sensor serial number	optional
Comment	optional
Set to work	current date is entered automatically or can be selected with …
Sensor monitoring	optional

3 **Calibration data tab**

Enter the calibration data for the Pt100 temperature sensor (refer to the sensor's certificate for the values).



3.2.2 Creating a method

The value of the temperature correction is affected by the respective heating block, the sample temperature and the gas flow rate. Therefore, it should be determined individually for each heating block, temperature and gas flow rate combination.

Instead of creating a new method, a method that already exists can also be modified accordingly.

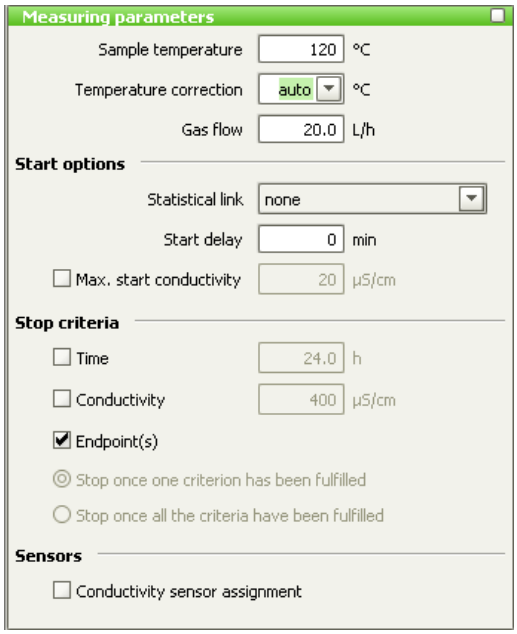
3.2.2.1 Creating a new method

See Chap. 2.2.1, page 6

3.2.2.2 Defining measuring parameters

Proceed as follows to activate the **auto** temperature correction:

1 Select the **auto** value for **Temperature correction** in the **Measuring parameters** subwindow.



3.2.2.3 Testing a method for plausibility

See Chap. 2.2.2, page 10

3.2.2.4 Saving the method

See Chap. 2.2.3, page 10

3.2.3 Assigning a workplace

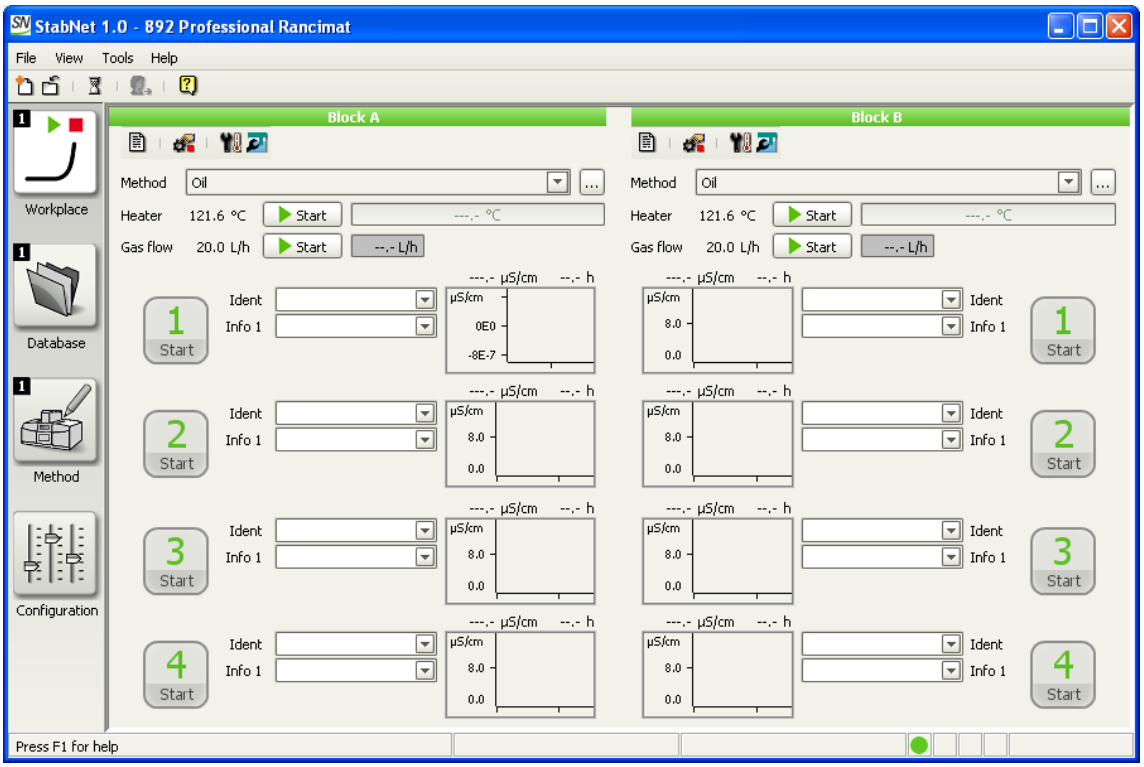
See Chap. 2.4.1, page 16

3.2.4 Carrying out the determination

You will learn the following in this chapter:

- How to determine the temperature correction (using a wizard)
- How to carry out a determination using automatic temperature correction

These steps are performed in the **Workplace** program part.



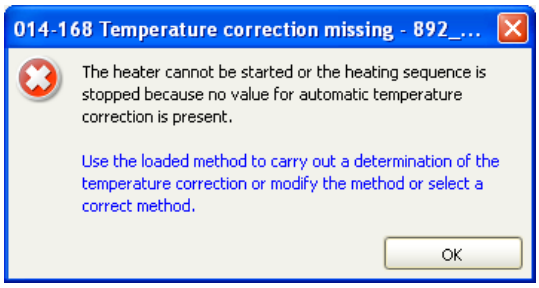
3.2.4.1 Determining the temperature correction

Note

You can find details for preparing the temperature sensor in the manuals for the 892 Professional Rancimat, 893 Professional Biodiesel Rancimat and 895 Professional PVC Thermomat instruments.

Temperature correction is determined using a wizard. Proceed as follows to do this.

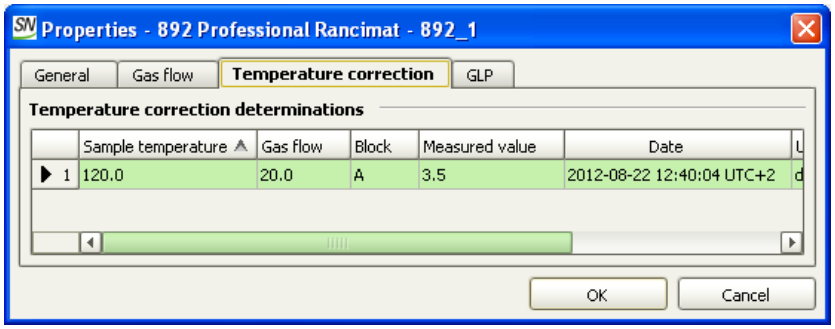
1. Load the method for block **A**.
2. If a **014-168** message appears, confirm it. The message only occurs if there is no value for temperature correction in the configuration for this heating block, sample temperature and gas flow rate.



3 Start the wizard using the **Tools** ▸ **Determine temperature correction...** ▸ **Block A** menu.

4 Follow the instructions in the wizard step by step.

The value of the temperature correction is written to the instrument's properties in the **Configuration** program part and saved after pressing **[Save]**.



5 If you intend to determine the temperature correction also at block **B** using the same method, repeat steps **1** through **4** for block **B**.

3.2.4.2 Preparing the determination

See Chap. 2.3, page 10

3.2.4.3 Carrying out the determination

See Chap. 2.4.2, page 17

4 Editing determinations

4.1 Viewing determinations

You have multiple options for selecting and viewing your determinations in the **Database** program part:

- Open the determination overview
- Format the table with determinations
- Sort according to column
- Find via a quick filter
- Find with a special filter
- Use the **Search...** menu
- Select via a batch (user-defined filter)

Opening the determination overview

1 Click on the icon for the **Database** program part.

2 Open the **Open database** dialog window using the **File ▸ Open...** menu.

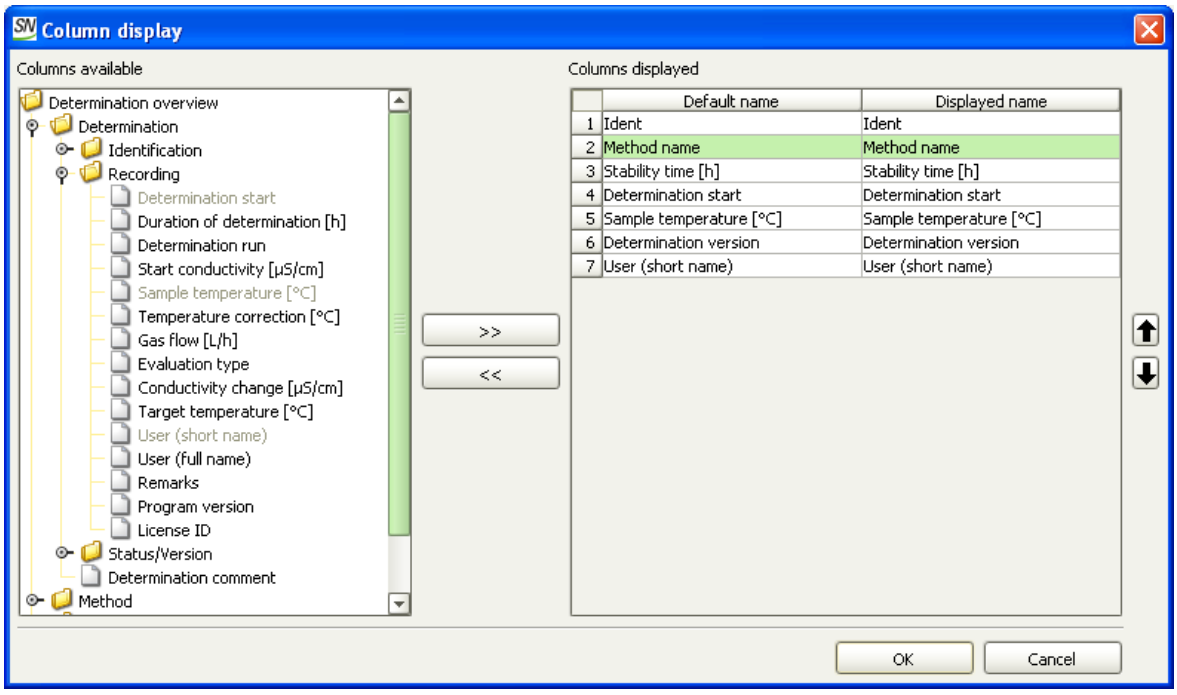
3 Select a database and click on **[Open]**.

The database is opened.

Formatting the determination overview

1 **Selecting columns**

- Open the **Column display** dialog window using the **View ▸ Properties ▸ Column display...** menu.
  Only the fields listed in the right column under **Columns displayed** are shown in the determination overview.



- In the **Columns available** column, select a parameter to be displayed in the determination overview.
- Click on the >> button.
- In the **Columns displayed** column, select a parameter **not** to be displayed in the determination overview.
- Click on the << button.
- Change the order of the displayed columns using ⬆ or ⬇ by moving the selected column up or down.
- Click on **[OK]**.

2 **Adjusting the column width**

- Position the cursor on the table's title bar between the two columns.

  The cursor assumes the following form: ✢
- Drag the column width to the required size keeping the left mouse button pressed down.

Sorting the determination overview

1 First click in the table with all the data sets on the column heading according to which the table is to be sorted.

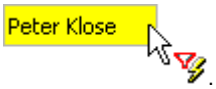
The table is sorted according to the selected column in ascending order.

2 Click again on the same column title.

The table is sorted according to the selected column in descending order.

Quick filter

1 Click on the **Determinations** ▸ **Filter** ▸ **Quick filter** menu or the  icon.

The cursor turns into a special filter symbol: 

.

When navigating within the table, the cells in which the cursor is located will have a yellow background.

2 Place the cursor in a cell serving as a filter criterion and double-click with the left mouse button.

The data sets are filtered according to the content of the selected table field. The quick filter can be applied again within the filtered table.

3 **Removing the applied filter**

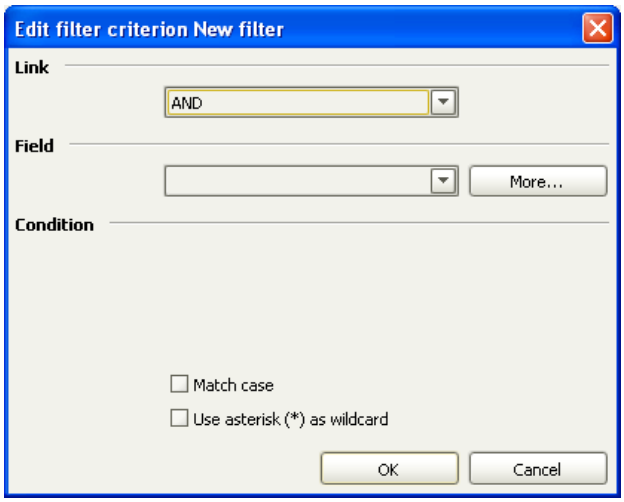
The currently applied quick filter is removed using the **Determinations** ▸ **Filter** ▸ **Remove filter** menu or the  icon. All data sets are displayed again.

Special filter

The special filter allows you to specify the filter conditions in detail.

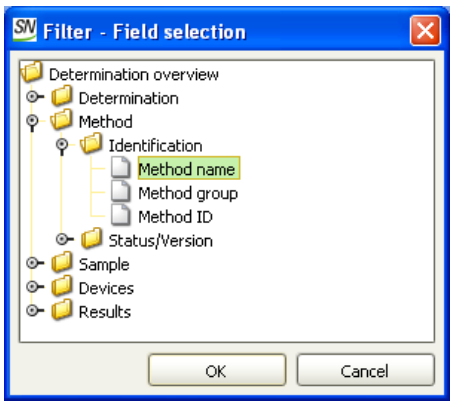
1 Open the corresponding dialog window using the **Determinations** ▸ **Filter** ▸ **Special filter...** menu or the  icon.

2 Open the **Edit 'New filter' filter criterion** dialog window using the **Edit** ▸ **Edit line** menu.

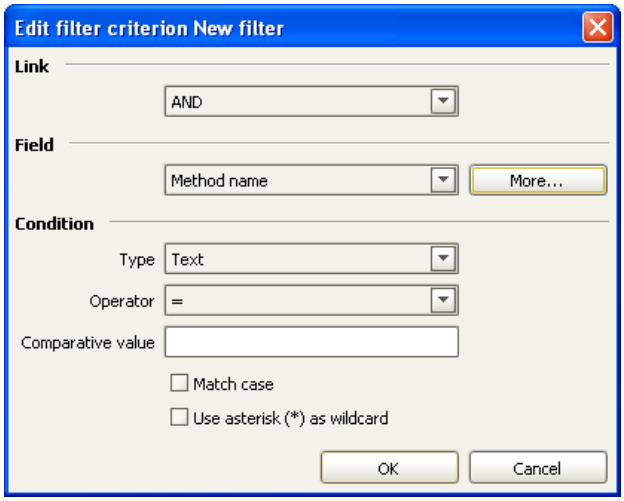


3 Click on the **More...** button in the **Field** section.

The **Filter - Field selection** dialog window opens.



4 In the **Filter - Field selection** dialog window, select an option such as the **Method name** field and click on **[OK]**.



5 In the **Comparative value** field, enter a method name such as **Oil method** and click on **[OK]**.

6 Click on the **[Apply filter]** button in the **Special filter - 'Database name' database** dialog window and close the window.

A table containing all of the data sets for the **Oil method** method appears in the **Determination overview** subwindow.

7 **Removing the applied filter**

The currently applied special filter is removed using the **Determinations ▸ Filter ▸ Remove filter** menu or the  icon. All data sets are displayed again.

Searching

1 Open the **Search - 'StabNet' database** dialog window using the **Determinations ▸ Search...** menu.

2 Open the **Search - Field selection** dialog window using the **[More...]** button in the **Search in** selection list.

3 Highlight the **User (short name)** entry under **Determination overview ▸ Determination ▸ Recording**.

4 Enter your short name in the **Search word** field.

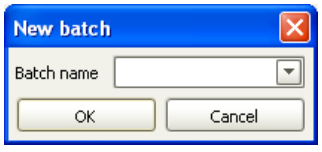
5 Click on **[Search next]**.

The first line corresponding to the search term is highlighted.

Batch (user-defined filter)

1 **Creating a batch**

- Open the **New batch** dialog window using the **Determinations ▸ Batch ▸ New Batch...** menu.

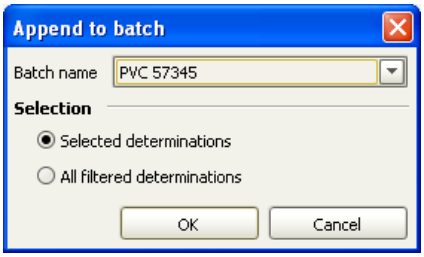


- Enter the name **Oil method** in the **Batch name** field.

- Click on **[OK]**.

2 Adding determinations to batch

- Highlight the data sets in the table which are to be added to the batch.
- Open the **Append to batch** dialog window using the **Determinations ▸ Batch ▸ Append to batch...** menu.

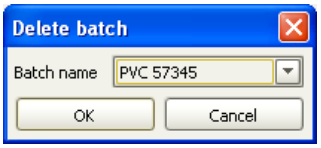


- Select the name **Oil method** in the **Batch name** selection box.
- Mark the **Selected determinations** option.
- Click on **[OK]**.

The data sets selected in the determination overview are added to the batch. If this batch is selected in the **Determination overview**, the associated determinations are displayed.

3 Deleting a batch

- Open the **Delete batch** dialog window using the **Determinations ▸ Batch ▸ Delete Batch...** menu.



- Select the name **Oil method** in the **Batch name** list box.
- Click on **[OK]**.

The batch is deleted from the database.

4.2 Viewing curves

Zoom using the mouse

Individual areas on a curve can be displayed in magnified form using the zoom function.

1 Highlight a data set in the overview table.

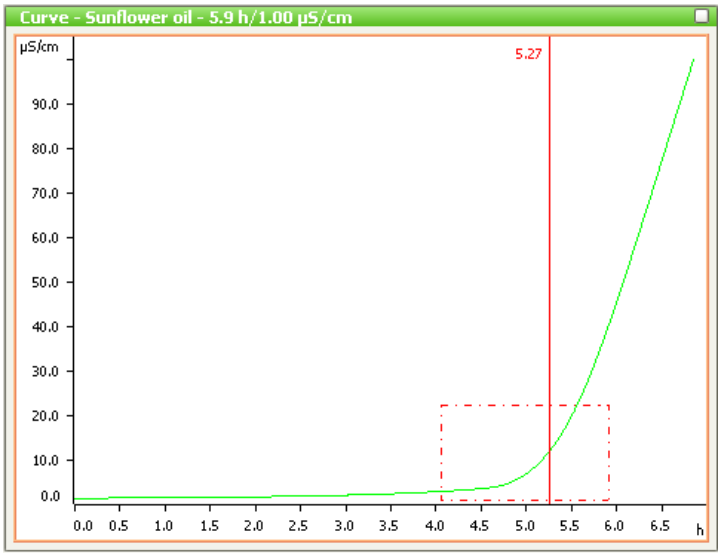
The associated curve is shown in the **Curve** subwindow.

2 **Dragging a zoom square**

- Place the cursor on the upper left corner of the sector to be magnified.
- Keeping the left mouse button pressed down, drag the cursor to the lower right corner of the sector.

3 **Releasing the mouse button**

- Release the mouse button in order to magnify the selected area to the full size of the window.



4 **Switching zoom off again**

- Right-click in the graphics window.
  The context-sensitive menu for graphs appears.
- Click on the **Unzoom** menu item.

Or

- Double-click in the graphics window.
  All zoom actions are deleted and the curve is once again shown according to the settings in the **Properties - Graphics** dialog window.

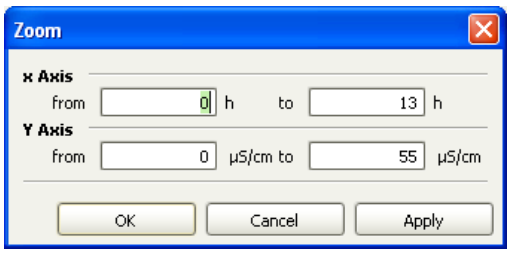
Zoom using the dialog

1 Highlight a data set in the overview table.

The associated curve is shown in the **Curve** subwindow.

2 Right-click on the curve.

3 Open the **Zoom** dialog window for entering the zoom range using the **Zoom...** context menu.



4 In the **x Axis** area, enter a value of **8.5** in the **from** field and a value of **12** in the **to** field.

5 Click on **[OK]**.

The area at the curve's break point is shown in magnified form.

Unzoom

1 Right-click on the curve.

2 Click on **Unzoom** in the context menu.

The curve is displayed at its original size.

Changing the display of the curve

You have the option to edit the properties of a curve. You can change the display of the curve, the axis labeling or the labeling in the curve. Below you will change the labeling for the axes in the curve. Proceed as follows:

1 Changing axis label

- Right-click on the curve.
- Select the **Properties...** menu item.
- Select the **Axes** tab in the **Properties - Graphics** dialog window.
- In the **x Axis** area, click in the **Axis label** field and enter **Induction time**.
- In the **y1 Axis** area, click in the **Axis label** field and enter **Conductivity**.
- Click on **[OK]**.

2 Displaying the curve of the 2nd derivative

- Right-click on the curve.
- Click on **Properties...** in the context menu.
- On the **Axes** tab, enable the **Display the curve of the 2nd derivative** check box.
- Select a color and a line thickness on the **Display** tab.
- Click on **[OK]**.

3 Displaying evaluation sensitivity

- Right-click on the curve.
- Click on **Properties...** in the context menu.
- On the **Display** tab, enable the **Evaluation sensitivity** check box.
- Select a color and the line thickness.
- Click on **[OK]**.

Overlaying curves

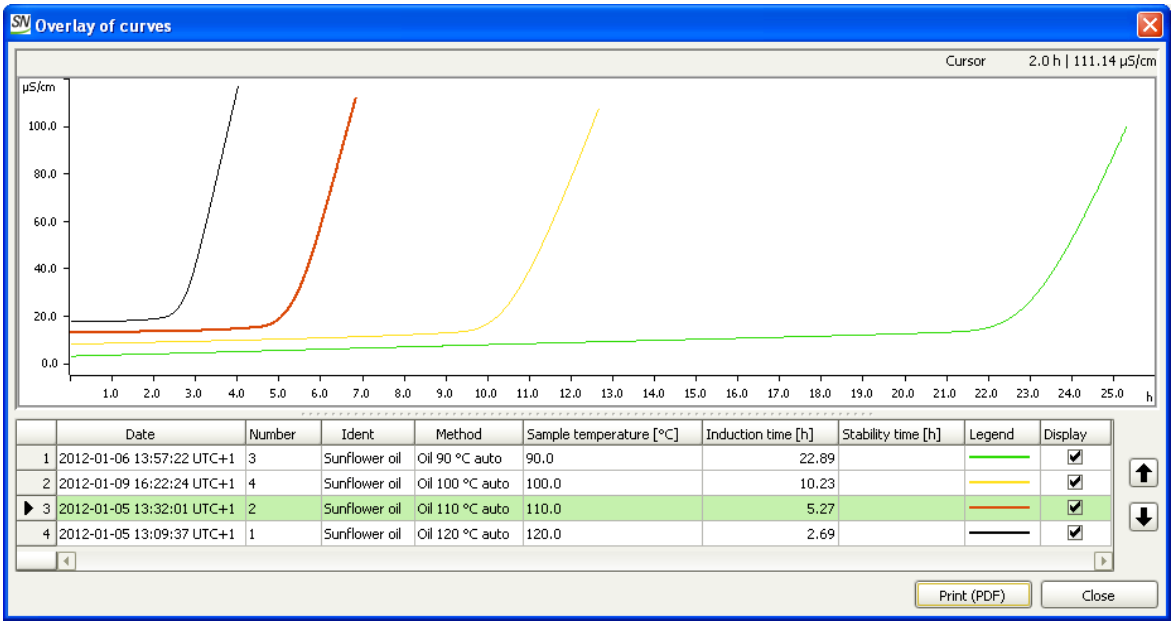
Proceed as follows to overlay the curves from selected determinations:

1 In the determination overview, select the curves to be overlaid. You can select non-adjacent determinations by holding down the Ctrl button.

2 Open the **Overlay curves** dialog window using the **Determinations ▸ Overlay curves...** menu or the symbol.

3 Select the **Selected determinations** option and click on **[OK]**.

The **Overlay of curves** window opens.



	Date	Number	Ident	Method	Sample temperature [°C]	Induction time [h]	Stability time [h]	Legend	Display
1	2012-01-06 13:57:22 UTC+1	3	Sunflower oil	Oil 90 °C auto	90.0	22.89			☑
2	2012-01-09 16:22:24 UTC+1	4	Sunflower oil	Oil 100 °C auto	100.0	10.23			☑
▶ 3	2012-01-05 13:32:01 UTC+1	2	Sunflower oil	Oil 110 °C auto	110.0	5.27			☑
4	2012-01-05 13:09:37 UTC+1	1	Sunflower oil	Oil 120 °C auto	120.0	2.69			☑

4.3 Reprocessing determinations

When reprocessing determinations, sample data, evaluation parameters and the curve evaluation can be changed and the results recalculated.

You have the following options for reevaluating curves:

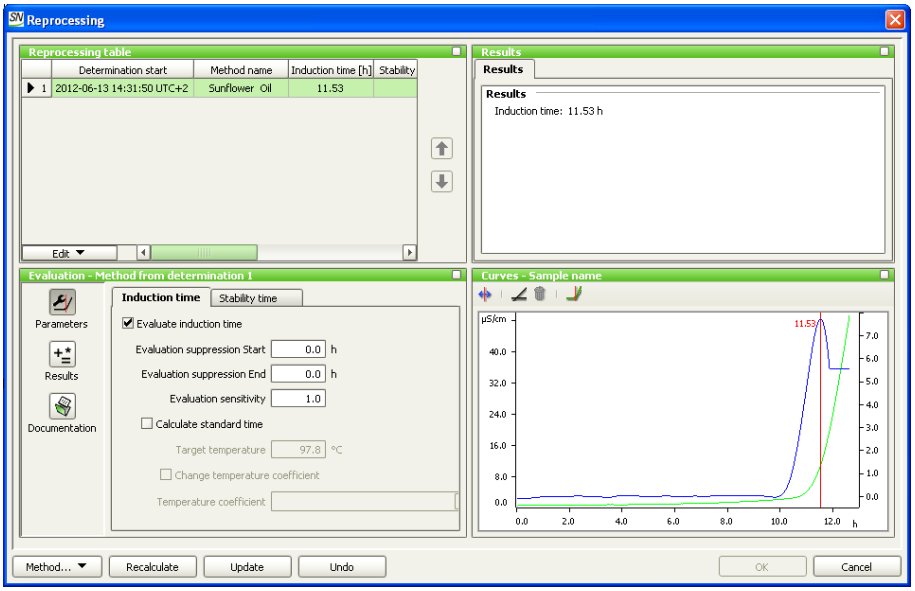
- Moving the induction time
- Setting tangents manually
- Deleting manually set tangents
- Changing evaluation sensitivity for the induction time
- Determining the stability time
- Resetting all reevaluations

Moving the induction time

Proceed as follows to move the induction time of a determination after the fact:

1 Opening the dialog window

- Highlight the determination(s) in the **Determination overview** subwindow.
- Open the **Reprocessing** dialog window using the **Determinations ▸ Reprocess...** menu or the symbol.



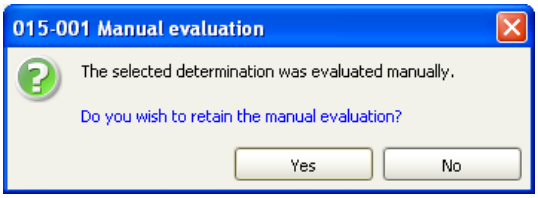
2 Moving the induction time

- Click on the symbol in the **Curves** subwindow.
- Place the cursor on the line for the induction time. It assumes the following form while doing so: ⟷
- Drag the line for the induction time to the desired position with the left mouse button held down.

The new value for the induction time is shown in the upper left next to the red line.

3 Recalculating the result

- Press the **[Recalculate]** button in the **Evaluation** subwindow.



- Confirm the message with **[Yes]**.

The new value for the induction time is displayed in the **Results** subwindow and in the reprocessing table.

4 Saving changes

- Close the **Reprocessing** dialog window using **[OK]**.

The new results are saved and displayed in the database in the **Determination overview** subwindow.

Setting a tangent manually

The **induction time** can also be determined manually using tangents. The induction time is then defined as the **intersection of the tangents**. Set the tangents as follows:

1 Opening the dialog window

- Highlight a determination in the **Determination overview** subwindow.
- Open the **Reprocessing** dialog window using the **Determinations ▸ Reprocess...** menu or the  symbol.

2 Setting first tangent

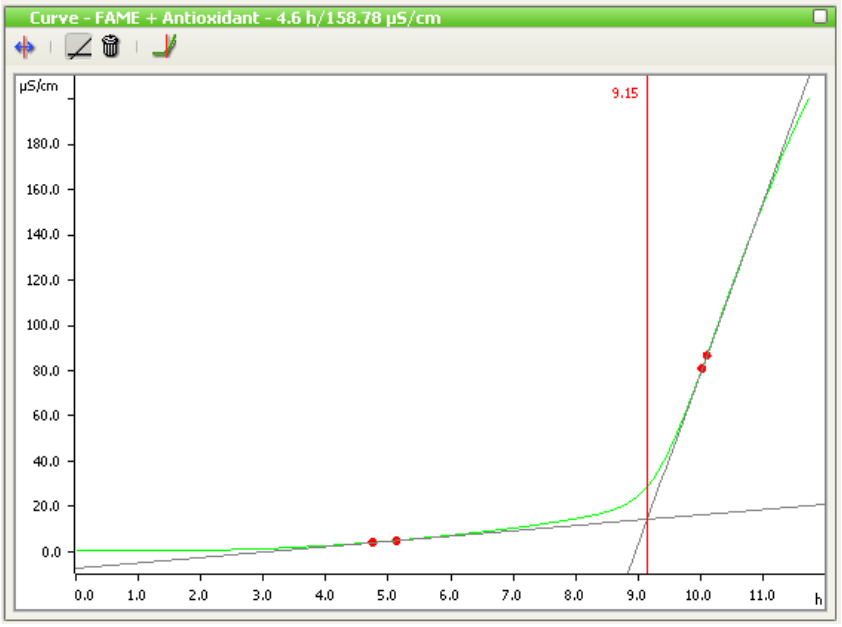
- Click on the  symbol.
- Move the red point to the flat portion of the curve using the cursor and define the first point by clicking the left mouse button.
- Move the cursor further on the flat portion of the curve and define a second point by clicking the left mouse button again.
- The first tangent is placed automatically using these two points.

3 Setting second tangent

- Move the third point to the steep portion of the curve using the cursor and mark the first point for the second tangent by clicking the left mouse button.

- Move the cursor further and define the second point for the second tangent the same way. The second tangent is placed automatically using the two points.

The new induction time displayed in the **Curve** subwindow is the result of the intersection of tangent 1 and tangent 2.



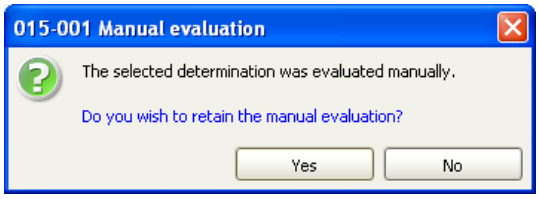
4 Adjusting tangents

- Hover the cursor over one of the four red points that define the tangents. The cursor changes to a +.
- Click the left mouse button to select a point. The selected point turns blue.
- Move the cursor until the selected point is at the desired position on the curve.
- Fix it in place at this position by clicking the left mouse button again.

The intersection point of both tangents, and thus the induction time, is recalculated automatically and displayed in the **Curve** subwindow.

5 Recalculating the result

- Press the **[Recalculate]** button in the **Evaluation** subwindow.



- Confirm the message with **[Yes]**.

The new value for the induction time is displayed in the **Results** subwindow and in the reprocessing table.

6 Saving changes

- Close the **Reprocessing** dialog window using **[OK]**.

The new results are saved and displayed in the database in the **Determination overview** subwindow.

Deleting tangents

Proceed as follows to delete the previously set tangents:

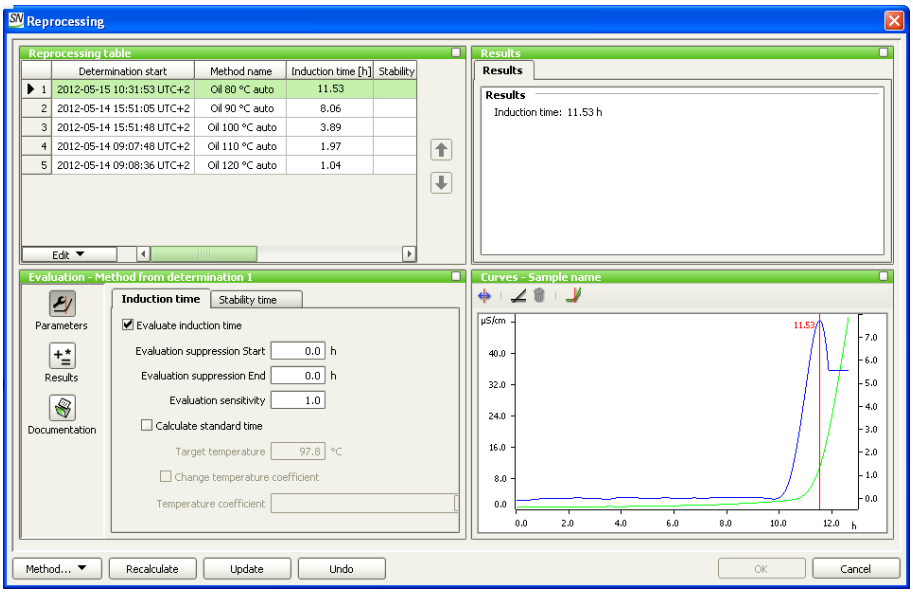
1 Click on the symbol.

Modifying evaluation sensitivity

Proceed as follows to modify the evaluation sensitivity for multiple determinations:

1 Opening the dialog window

- Ensure that both the 2nd derivative and the line for evaluation sensitivity are displayed in the curve *(see "Changing the display of the curve", page 40)*.
- Highlight the determinations in the **Determination overview** subwindow.
- Open the **Reprocessing** dialog window using the **Determinations ▸ Reprocess...** menu or the symbol.

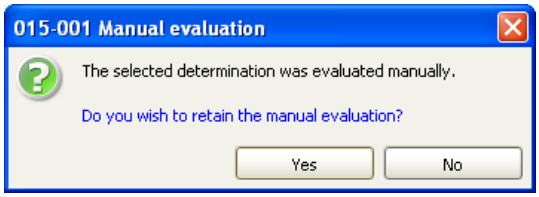


2 Modifying evaluation sensitivity

- Activate the **Evaluate induction time** check box on the **Induction time** tab in the **Evaluation** subwindow.
- Enter a value in the **Evaluation sensitivity** field.

3 Updating results

- Press the **[Update]** button in the **Evaluation** subwindow.

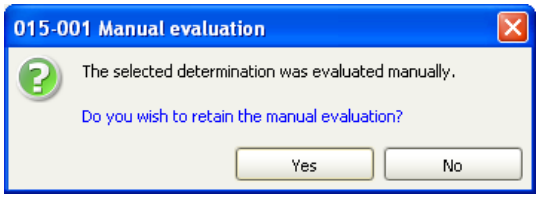


- Confirm the message with **[Yes]**.

The focused determination is recalculated and the result is displayed in the **Results** subwindow and in the reprocessing table.

4 Recalculating results

- Press the **[Recalculate]** button in the **Evaluation** subwindow.



- Confirm the message with **[Yes]**.

All of the determinations in the reprocessing table are recalculated with the parameters of the focused determination and the results are displayed in the **Results** subwindow and in the reprocessing table.

5 Saving changes

- Close the **Reprocessing** dialog window using **[OK]**.

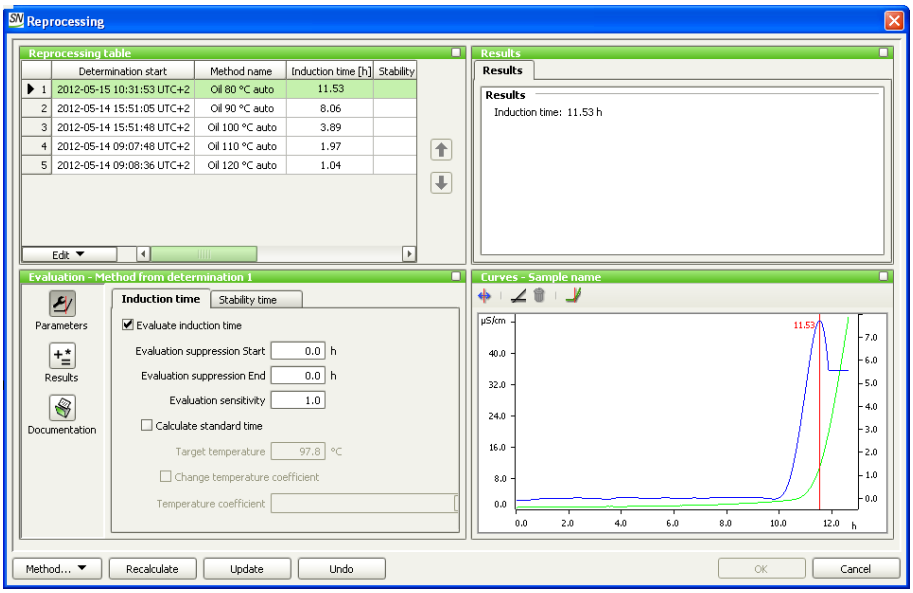
The new results are saved and displayed in the database in the **Determination overview** subwindow.

Determining stability time

By default only **Induction time** is activated in the **Oil** and **Biodiesel** method templates. However, you have the option of calculating the stability time after the fact. Proceed as follows:

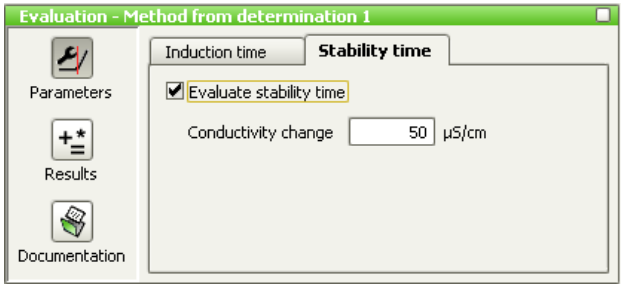
1 Opening the dialog window

- Highlight the determinations in the **Determination overview** subwindow.
- Open the **Reprocessing** dialog window using the **Determinations ▸ Reprocess...** menu or the symbol.



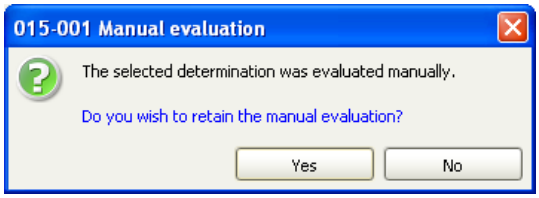
2 Enabling the stability time calculation

Activate the **Evaluate stability time** check box in the **Evaluation** subwindow on the **Stability time** tab.



3 Updating results

- Press the **[Update]** button in the **Evaluation** subwindow.

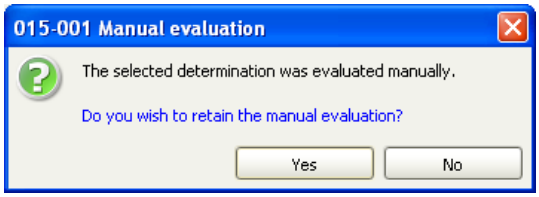


- Confirm the message with **[Yes]**.

The focused determination is recalculated and the result is displayed in the **Results** subwindow and in the reprocessing table.

4 Recalculating results

- Press the **[Recalculate]** button in the **Evaluation** subwindow.



- Confirm the message with **[Yes]**.

All of the determinations in the reprocessing table are recalculated with the parameters of the focused determination and the results are displayed in the **Results** subwindow and in the reprocessing table.

5 Saving changes

- Close the **Reprocessing** dialog window using **[OK]**.

The new results are saved and displayed in the database in the **Determination overview** subwindow.

4.4 Extrapolation

The relationship between the induction time or stability time and sample temperature is displayed using extrapolation. It can be used for extrapolating the measured results to another temperature. In addition, the factor for converting the induction time to standard time can also be determined.

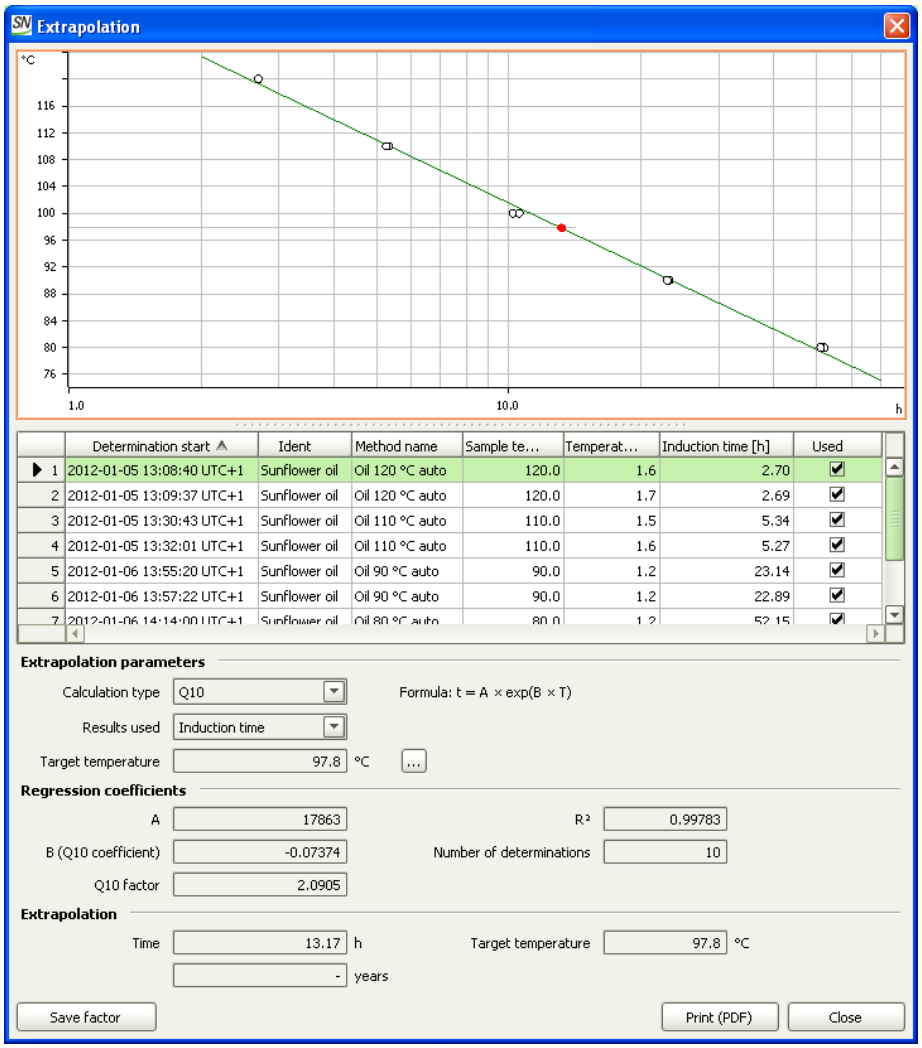
Extrapolation requires that a sample has been measured at at least two different temperatures, but three or more temperatures would be better.

4.4.1 Extrapolating the induction time

Proceed as follows to calculate the induction time for a specific temperature:

1. In the **Determination overview** subwindow, select determinations for a sample that have been carried out at different temperatures.
2. Open the **Extrapolating determinations** dialog window using the **Determinations ▸ Extrapolation...** menu.
3. Select the **Selected determinations** option and click on **[OK]**.

   The **Extrapolation** dialog window opens.



4 Select the desired options for the **Calculation type** and **Results used** extrapolation parameters.

5 Click on the … symbol and enter the desired **Target temperature** and click on **[OK]**.

In the **Time** field, the result of the extrapolation for the specified temperature is displayed in hours and even in years if it is more than 100 hours.

Refer to Online Help under "Extrapolation - Calculation" for the theory of extrapolation.

4.5 Editing a report template

StabNet contains example report templates. These report templates can be adapted as needed. Modules can be added, removed or their properties can be modified. Only the **Fixed report** module cannot be edited. Below you will replace an image in the provided **EN Report short** report template and add a new fixed report.

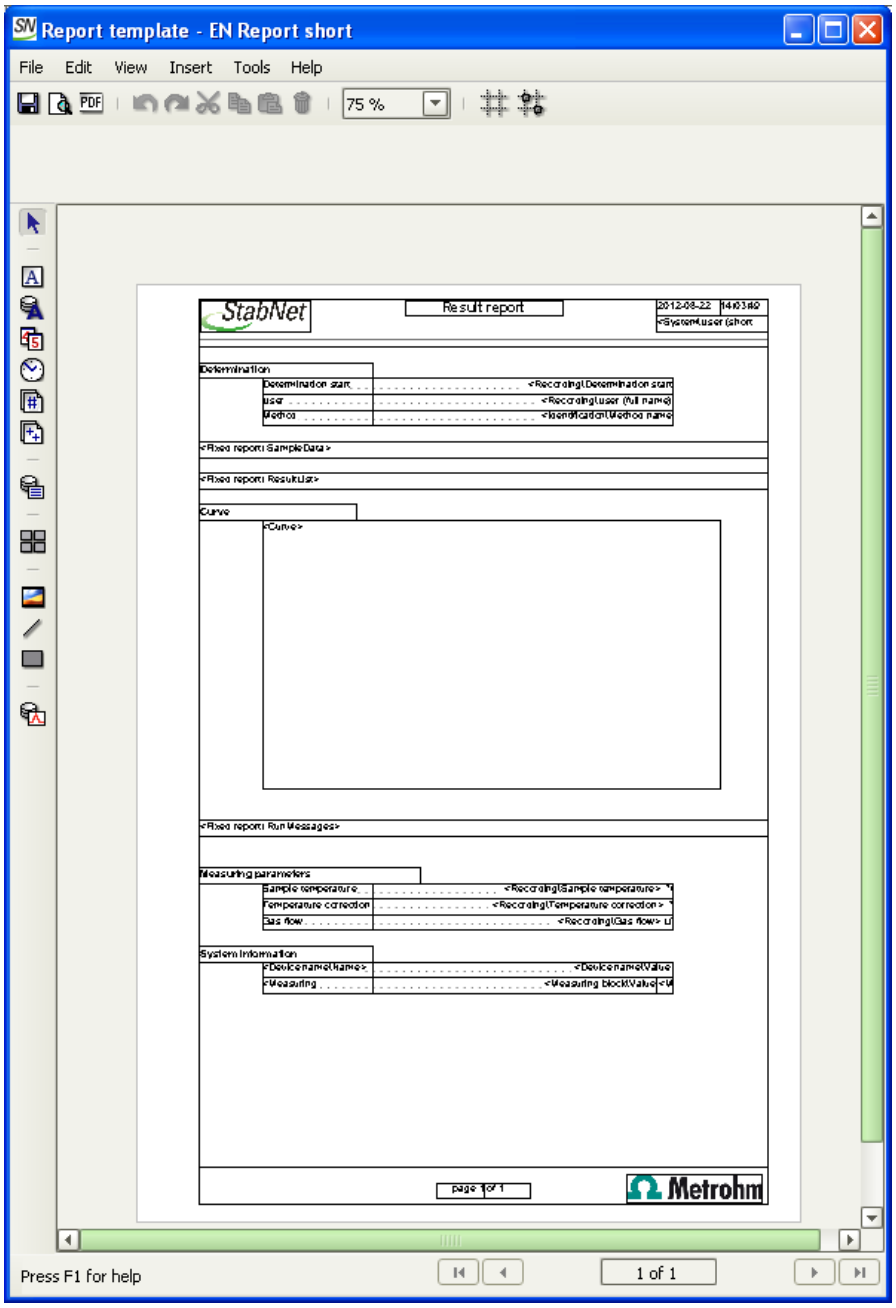
Opening a report template

Proceed as follows to edit the **EN Report short** report template:

1. Select **Database** program part.
2. Open desired database.
3. Select one or more determinations in the determination overview.
4. Click on the  symbol or the **Tools** ▸ **Report templates** ▸ **Open...** menu item.

   The **Open report template** program window opens.
5. Select the **EN Report short** report template.
6. Click on **[Open]**.

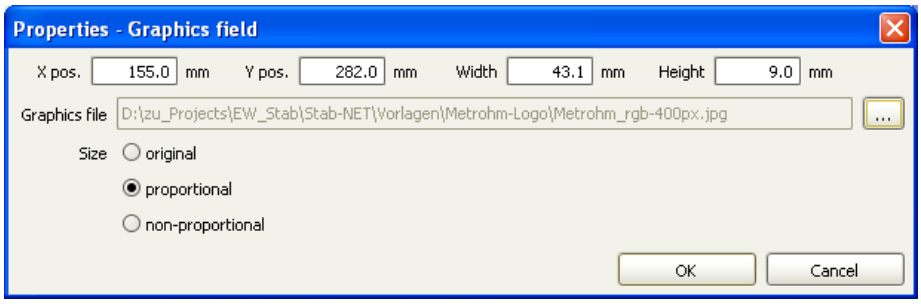
   The program window with the selected report template opens.



Replacing an image

1 Select the symbol on the module bar and double-click on the Metrohm logo in the bottom right corner of the report.

The properties window for the graphics field opens automatically.



2 Open the dialog window for selecting the new graphics file by clicking on ...

3 Select the desired new graphics file in JPG or PNG format and confirm with **[OK]**.

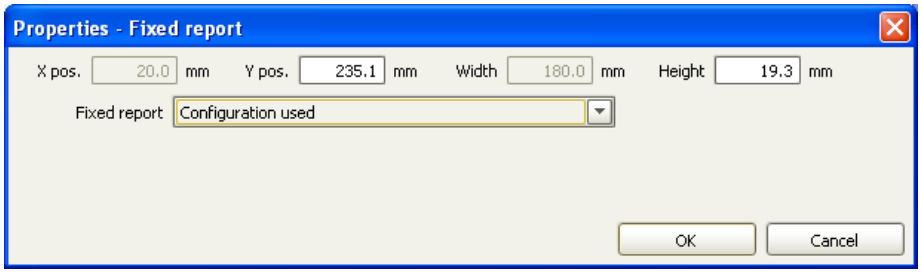
4 Adjust the position, width, height and size of the image.

5 Close the properties window with **[OK]**.

Inserting a new fixed report

1 Select the symbol on the module bar and place it on the report template by creating a field with the left mouse button.

The properties window for the fixed report opens automatically.



2 Select the **Configuration used** option in the **Fixed report** field.

3 Close the properties window with **[OK]**.

Saving the report template

1 Click on the **File** ▸ **Save As...** menu item.

The **Save report template** dialog window opens.

2 Enter a name for the new report template and click the **[Save]** button.

The report template is saved under the specified name.

4.6 Printing a determination report

Proceed as follows to print a determination report:

1 Select **Database** program part.

2 Click on the symbol or the **File ▸ Open...** menu item.

The **Open database** dialog window opens.

3 Select desired database or enter name in the **Database name** field.

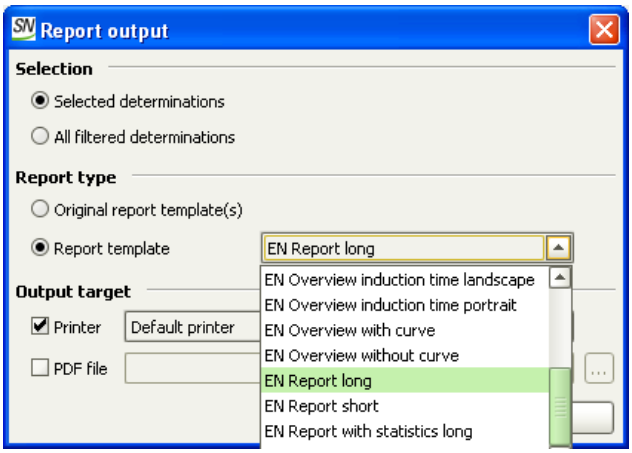
4 Click on **[Open]**.

The data sets of the selected database are displayed in the **Determination overview**. The database name is displayed in the title bar of the program, the number of currently opened databases is displayed in the left upper corner of the database symbol.

5 Select desired determinations.

6 Click on the **File ▸ Print ▸ Report...** menu item.

The **Report output** dialog window opens.



7 Select the **Report template** option and the desired report template under **Report type**.

8 Under **Output target**, enable the check box **Printer** and/or **PDF file**.

> **Note**
>
> If several reports are produced simultaneously as a PDF file, then an index will be automatically appended to the file name.

9 Click on **[OK]** in the **Report output** dialog window.

The reports of the selected determinations will be output.

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