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manual software LabDry

version 1.1
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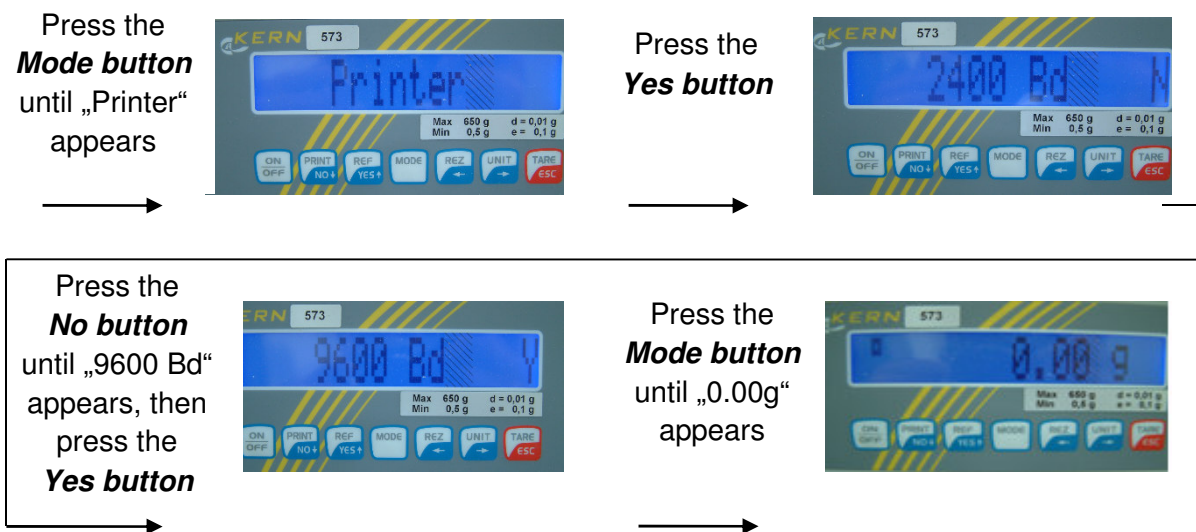
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In general

The LabDry software is part of an automated system for the determination of water content of material. The complete system consists of a scale (RS232 connection, optionally calibrated), 100 aluminium bowls (barcode labelled) for samples, a barcode scanner (with USB interface) and the LabDry software, which is acting as an interface between the single components and as archive. All measurements are stored in a central data base and identified by a unique number.

Scale settings:

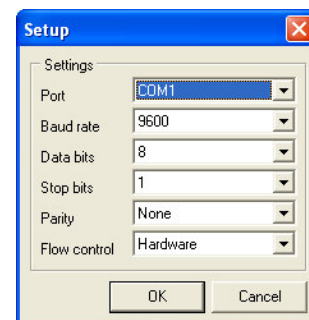
At delivery the scale is ready configured. If the settings for any reason have been changed, you can restore the original settings as indicated below:



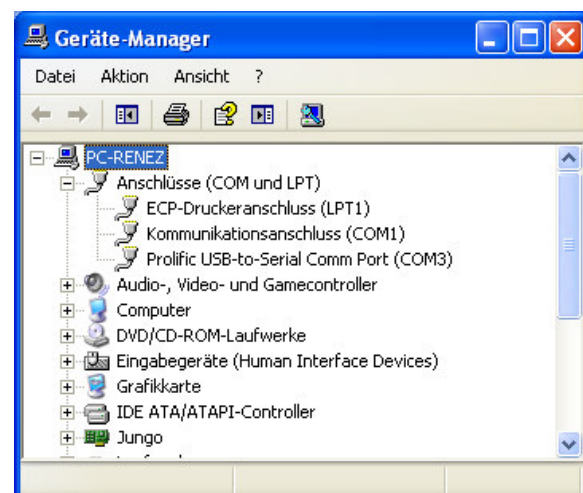
LabDry setup of scale

The setup of scale has to be adjusted in the software according to the picture on the right. Only the first line called „port“ can vary. This line illustrates the interface number the scale is connected to.

Please check the right interface number in the device manager of your windows programme (system control -> system -> hardware -> device manager -> connections)

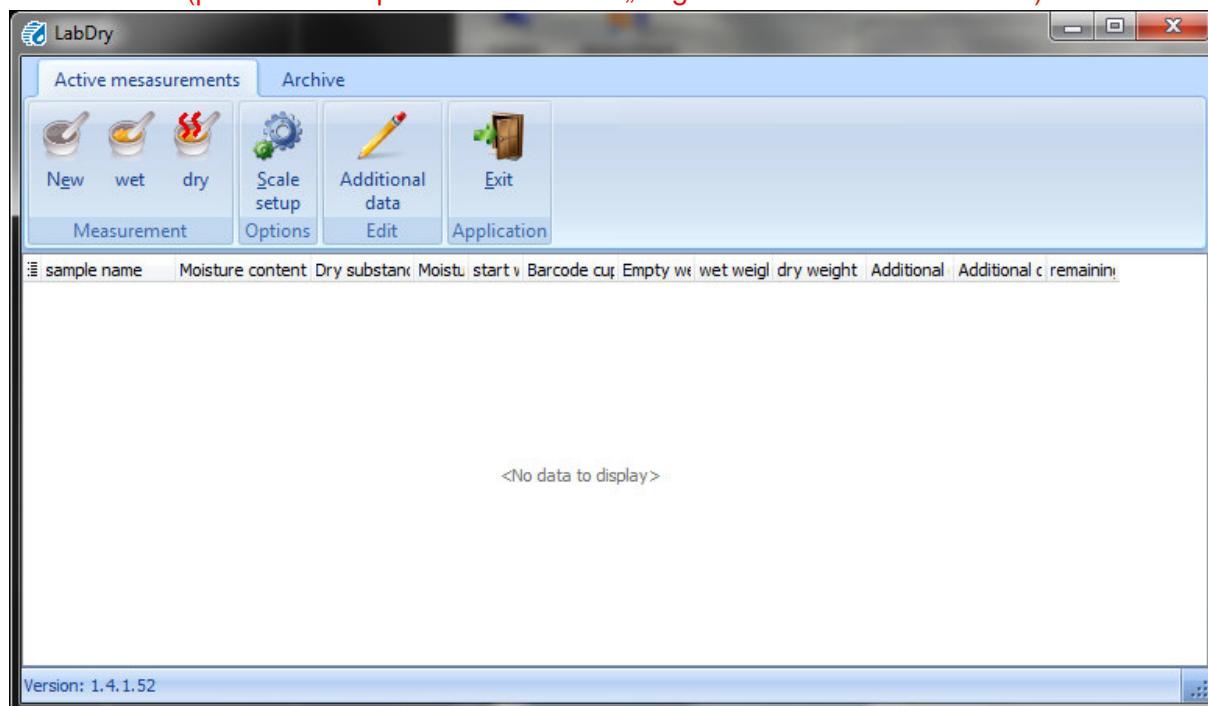


If an USB/RS232 converter is used, the list contains the entry „USB serial converter“.



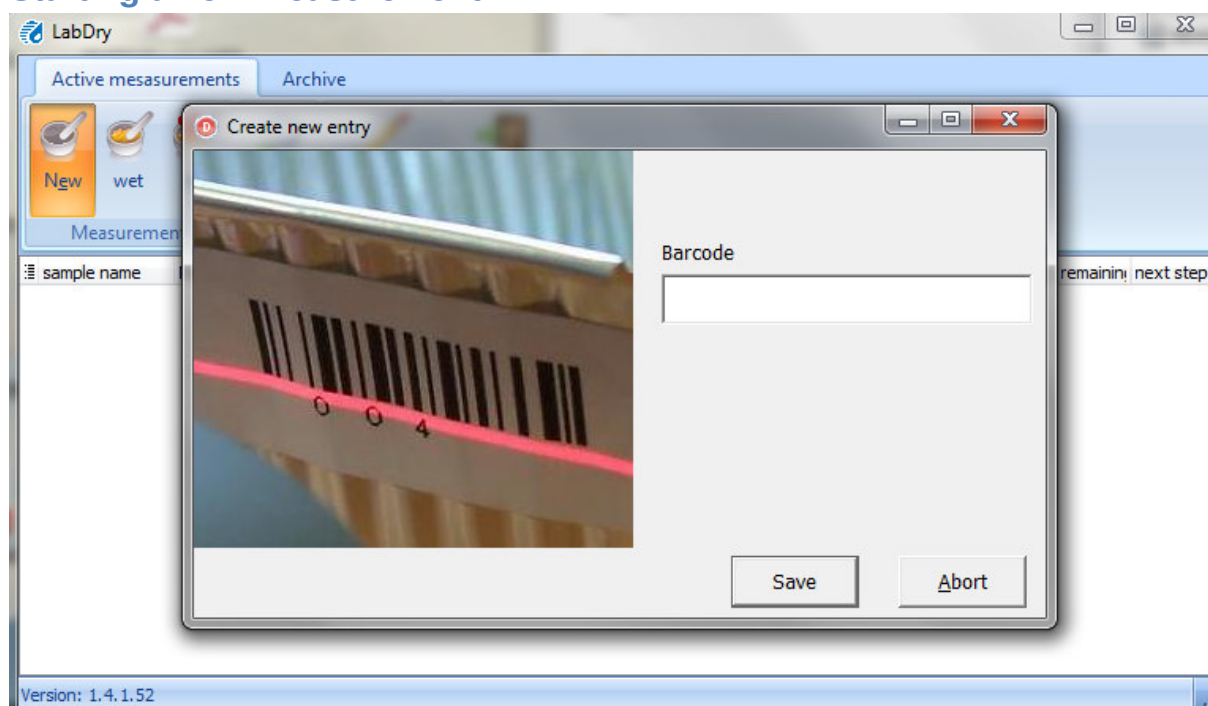
Main menu

First of all the software has to be registered
(please see separate instructions „Registration advice“ on the CD)



This window represents the main menu. The programme is subdivided into two parts: the tab „Active measurements“ and the tab „Archive“. All active measurements and already scanned sample bowls are shown in the window „Active measurements“. As soon as a sample bowl comes out of the drying chamber and the dry weight is transferred, the corresponding measuring data moves to the archive.

Starting a new measurement



For starting a new measurement press the button „New“.

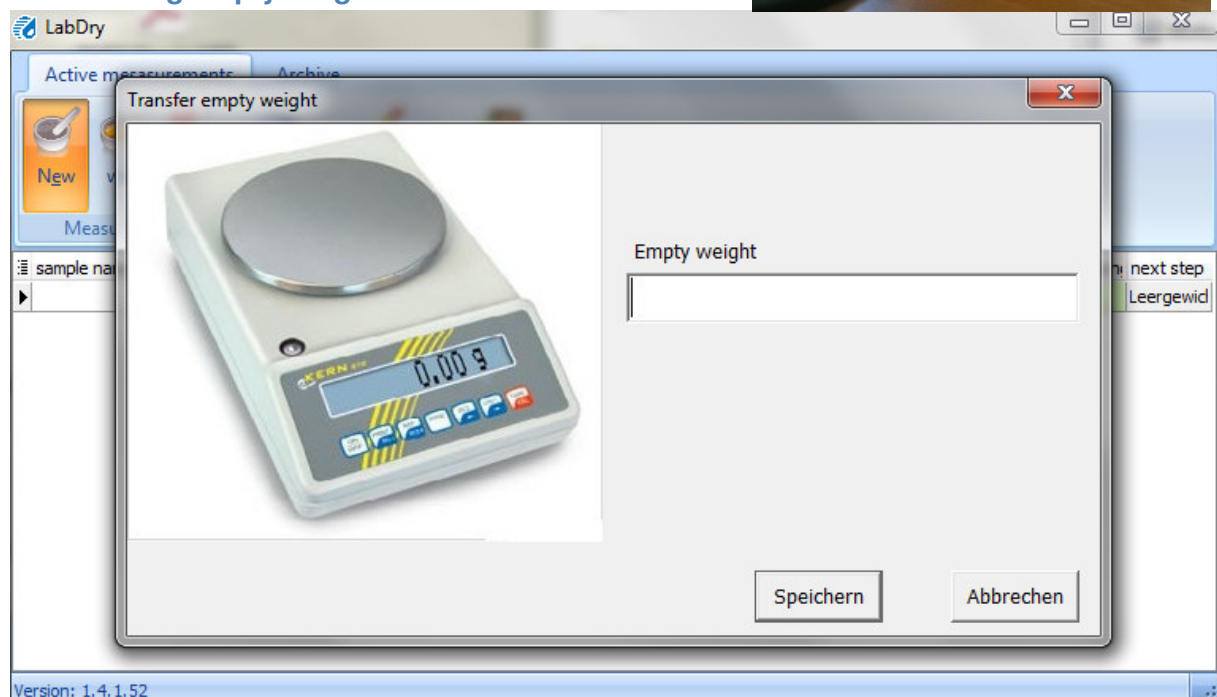
After that, a popup window asking for the barcode of the bowl appears. The entry of the barcode is effected by the hand scanner.

Scanning the barcode

The barcode scanner has to be connected to an USB interface of the PC. Plugging in the scanner, an acoustic signal indicates that the scanner is ready for use. Focus the scanner on the barcode of the aluminium bowl and press the button. The successful reading of the barcode is indicated by an acoustic signal and the popup window closes.



Transferring empty weight



After reading the barcode a new popup window asking for the empty weight appears. For that, place the empty and clean bowl at the centre of the scale.

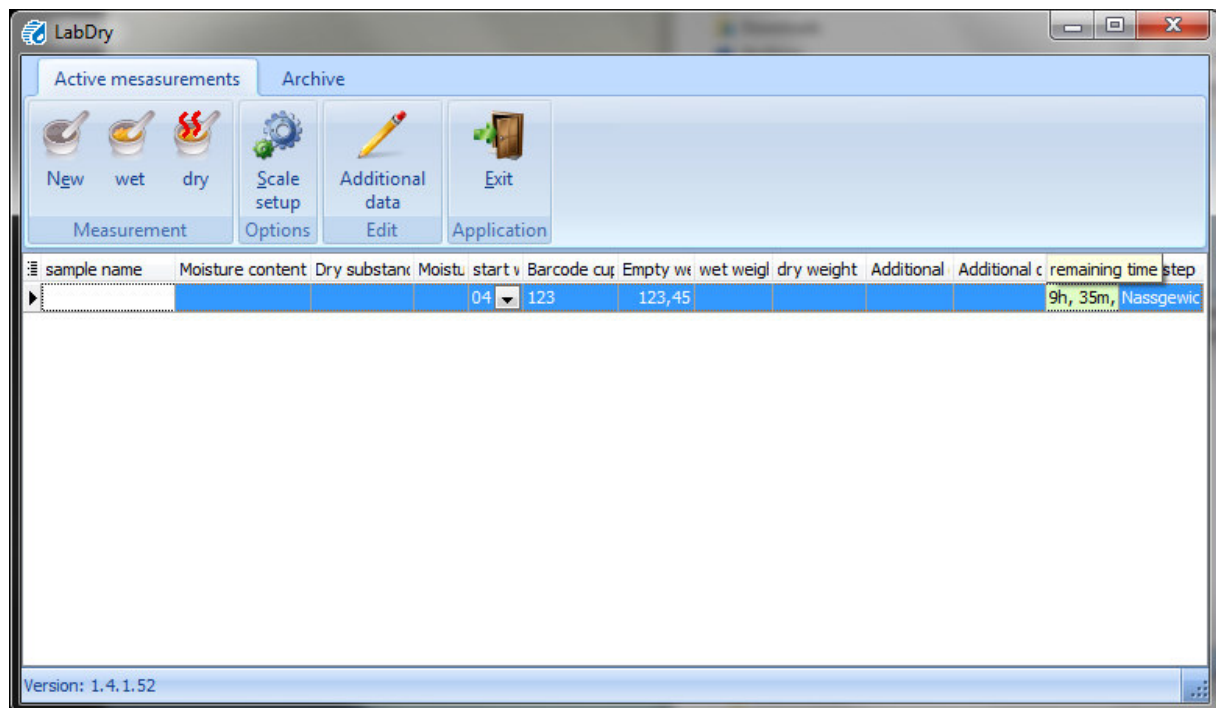
Importing scale value

After the scale is configured and connected as indicated on page 2 of this manual, for transferring the current weight to the software the „Print“ button of the scale has to be pressed.

Wait until the scale shows a stable weight value and then press „Print“. After the successful transfer the popup window closes automatically.

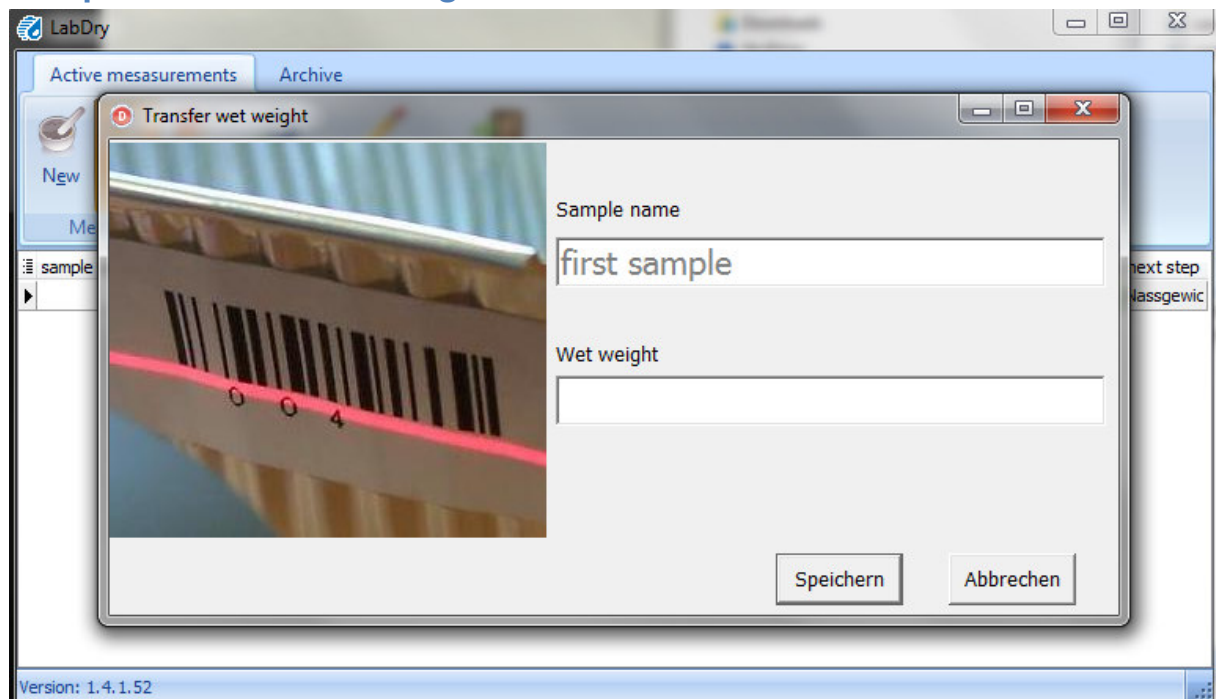


Important: Before reading in any weight, make sure to tare the scale first. This means that the scale has to show a value of „0.00g“ and nothing is placed on the scale!!



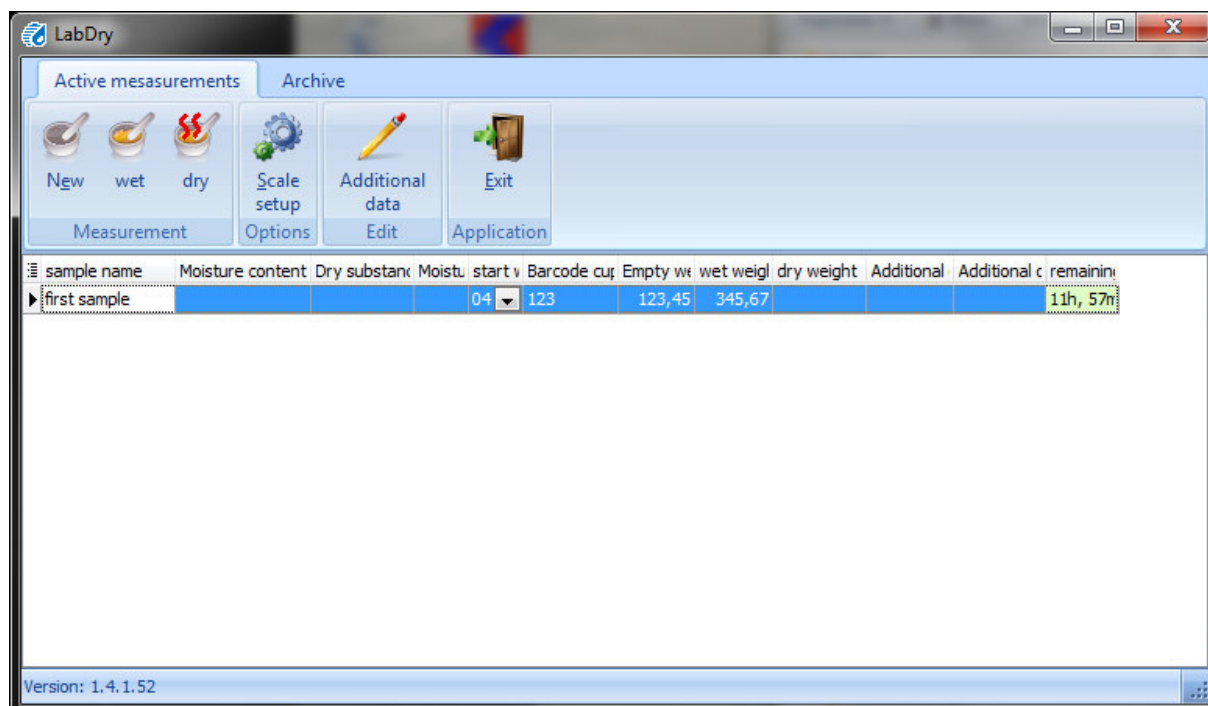
After the successful transfer, the empty weight is shown on the display. Now fill the bowl with the material to be measured.

Sample name and wet weight



Now press the button „wet“. A popup window asking for the barcode appears. Scan the barcode of the bowl using the barcode scanner. After the successful scan a new popup window asking for the sample name and wet weight appears. Please enter a sample name now. The entered name can be modified afterwards.

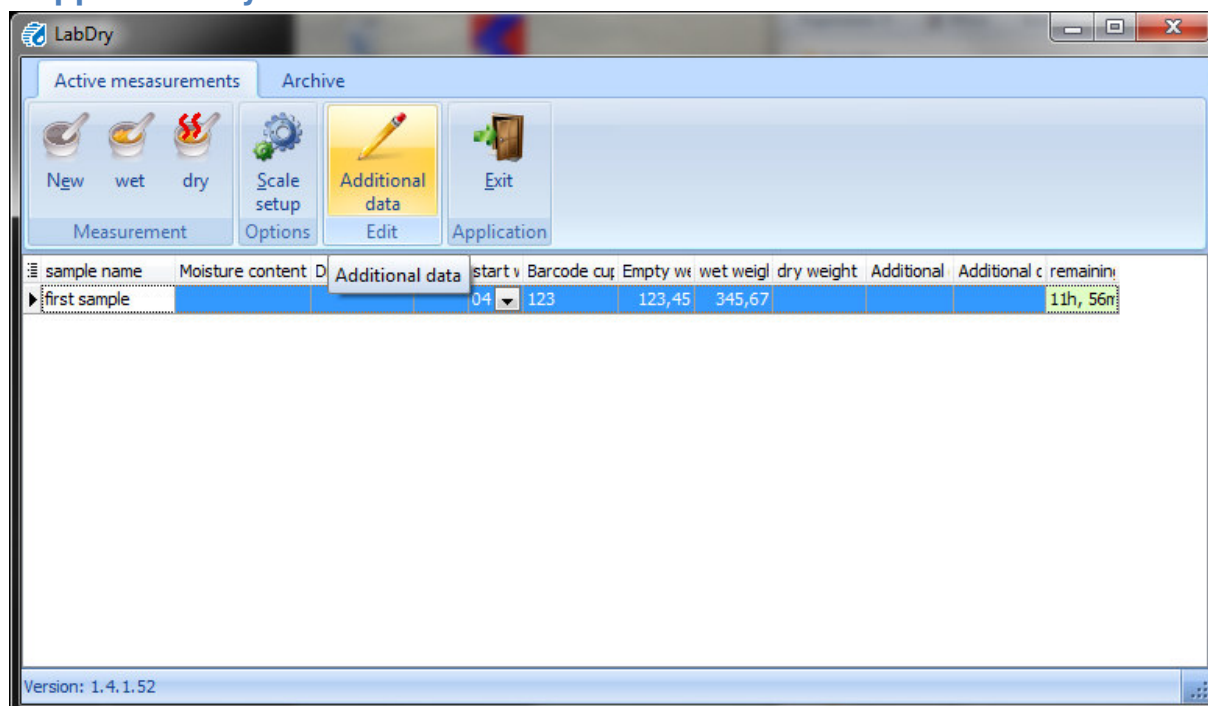
For entering the wet weight, place the bowl on the scale, wait until a stable weight value is shown and press the „Print“ button of the scale.



After the successfully weighing put the bowl into the drying chamber. The entered weight values now cannot be changed any more. If there has been any error during the weighing procedure a new measurement has to be started.

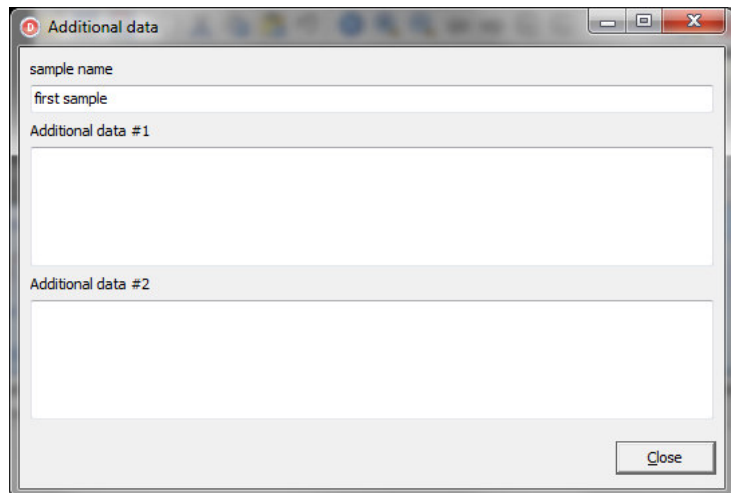
From this moment on you must not remove any material from the bowl. Otherwise the measurement would cause wrong measuring results.

Supplementary data

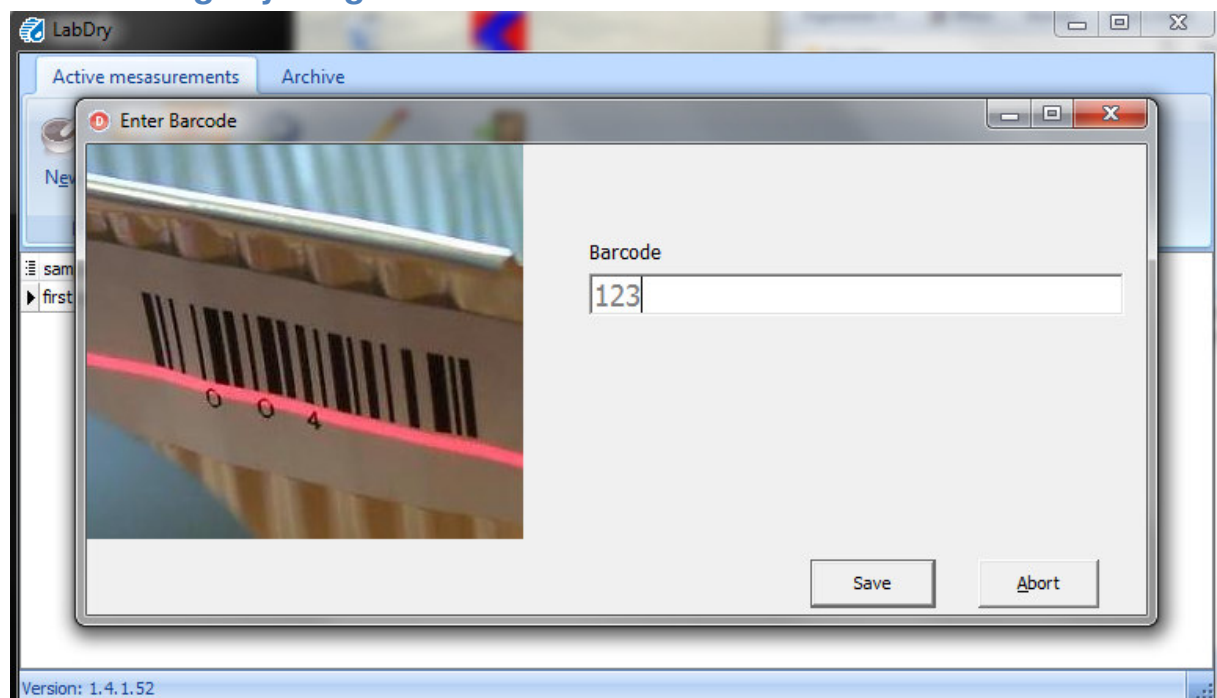


When the wet weight has been entered, you can insert additional information about this sample. Also the sample name can be modified now. This is the last time that supplementary data and sample name can be added or changed.

Pressing the button „supplementary data“ the illustrated popup appears. The supplementary data as well as the sample name are stored in the archive and enable the explicit and clear classification of a measurement to a certain customer or to a certain delivery.



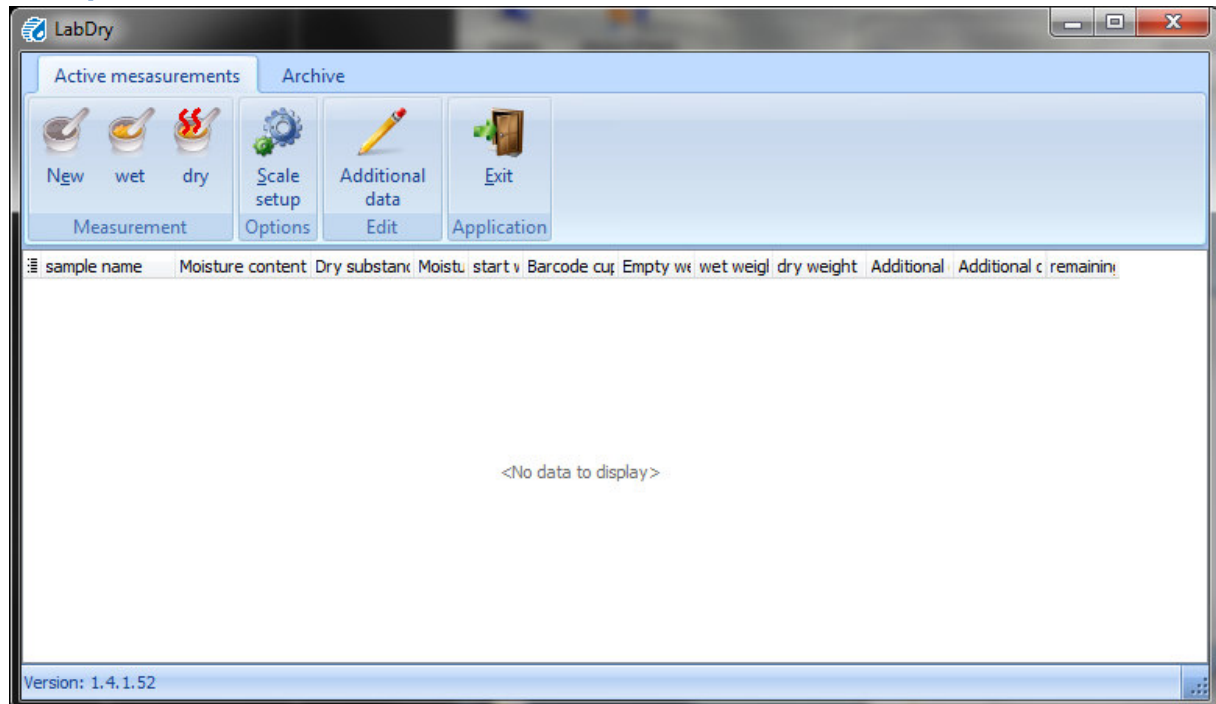
Transferring dry weight



Finally the dry weight of the sample has to be transferred. The sample has to be dried in the drying chamber at 105°C (+/- 2°C) as long as it loses no weight any more. Depending on the water content and the sample quantity this may take between 6 to 24 hours! (The time until a constant weight is reached has to be determined once, this time period can be taken as guide value for further measurements.)

For that, press the button „dry“. A popup window asking for the barcode appears. Scan the barcode of the bowl using the barcode scanner. After the successful scan a new popup window asking for the dry weight appears. For that place the bowl on the scale, wait until the scale shows a stable measuring value and press the “Print” button of the scale.

Completed measurements

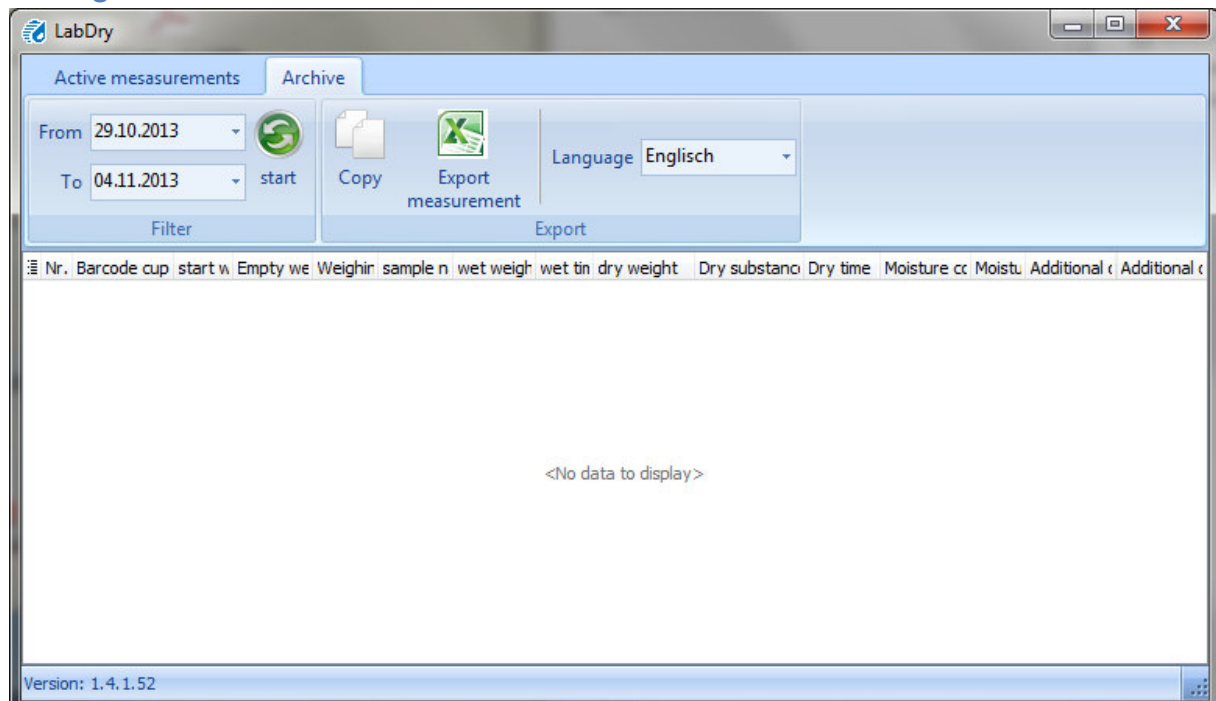


After successfully transferring the dry weight, the measuring data is switched to the archive. From now on the bowl can be used for measuring a new sample!

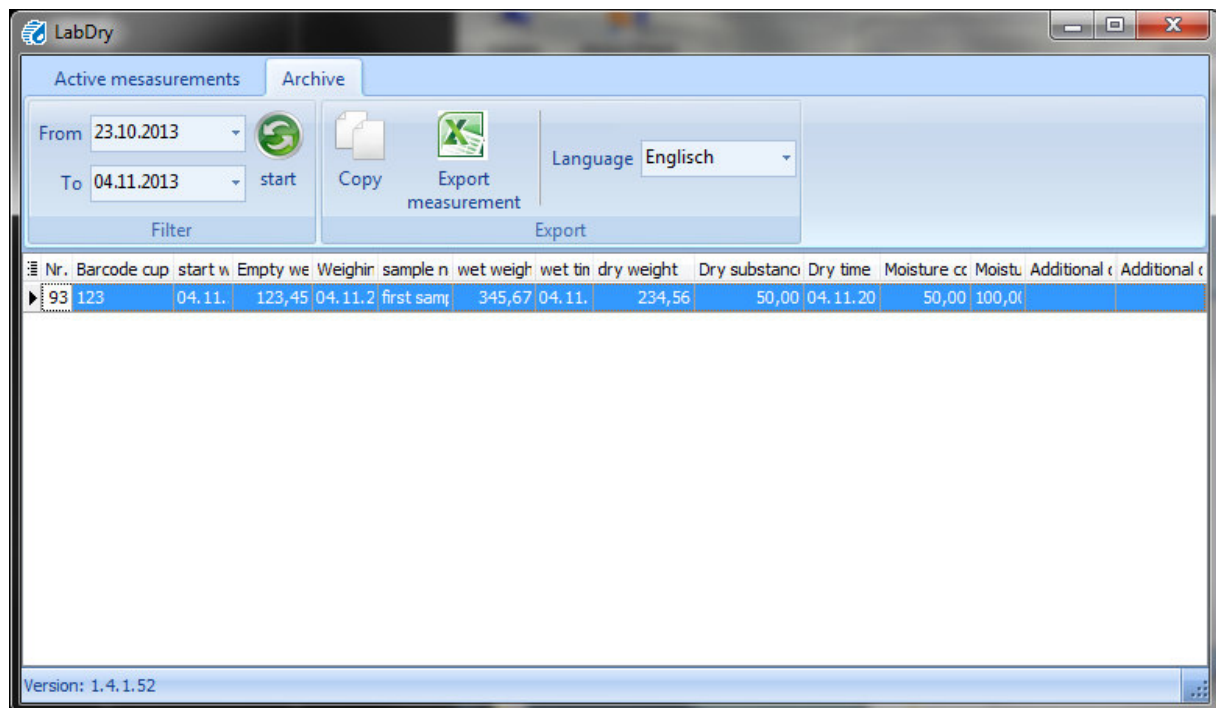
Archive

The archive contains all completed measurements, provided with a unique measuring number.

Setting date filter

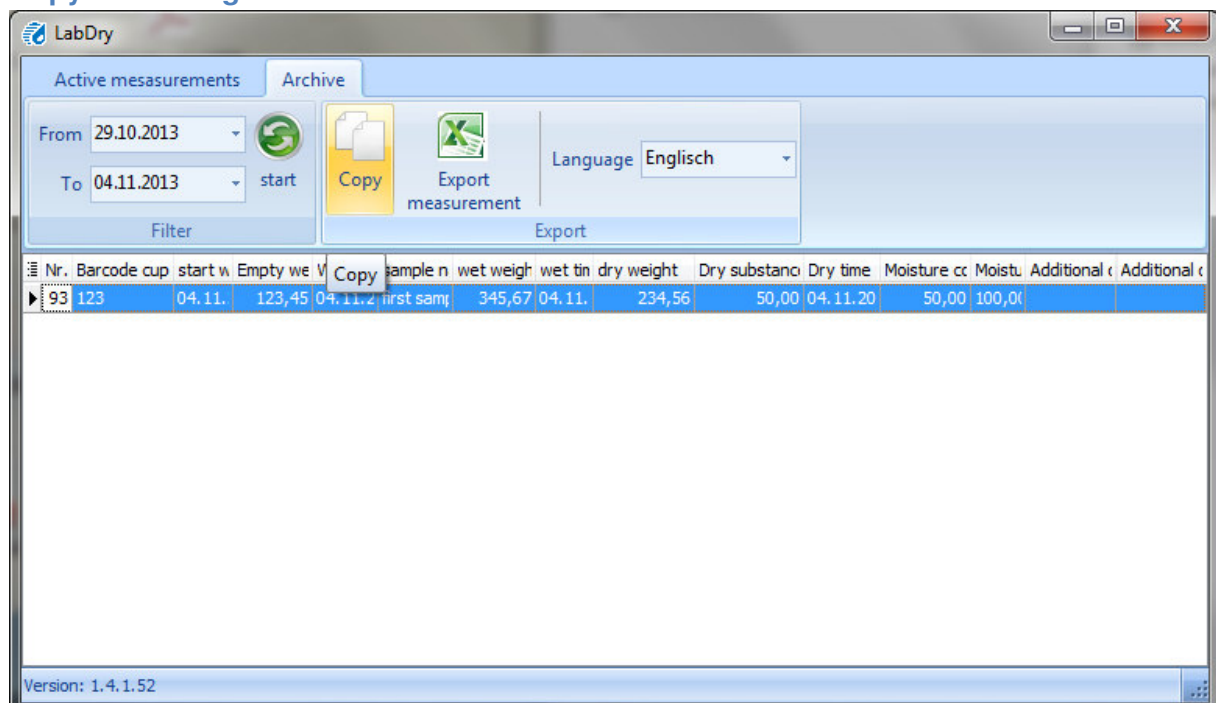


For ensuring a well-arranged and clear view of completed measurements, you have to select a certain time period of measurements that should be shown. After entering the date and pressing the "Start" button the respective measurements are displayed.



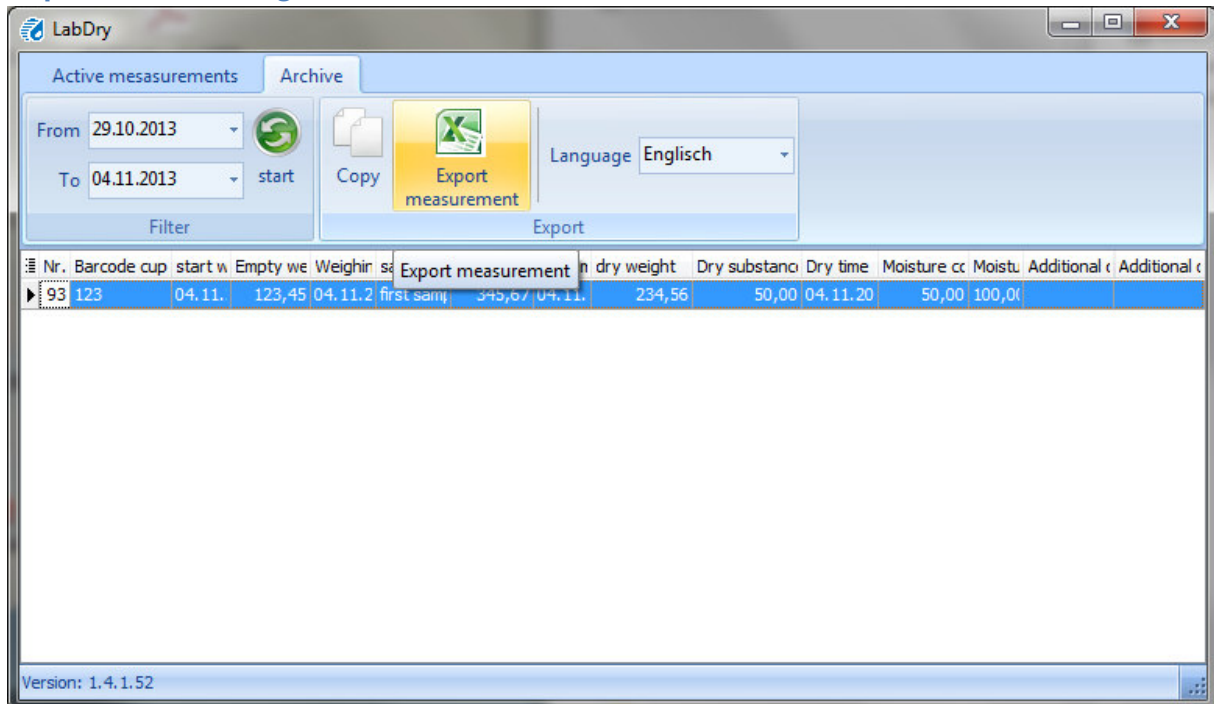
Now all measurements in the desired time period are displayed. Note that the archive contains all completed measurements, even when they are currently not shown on the display.

Copy measuring series



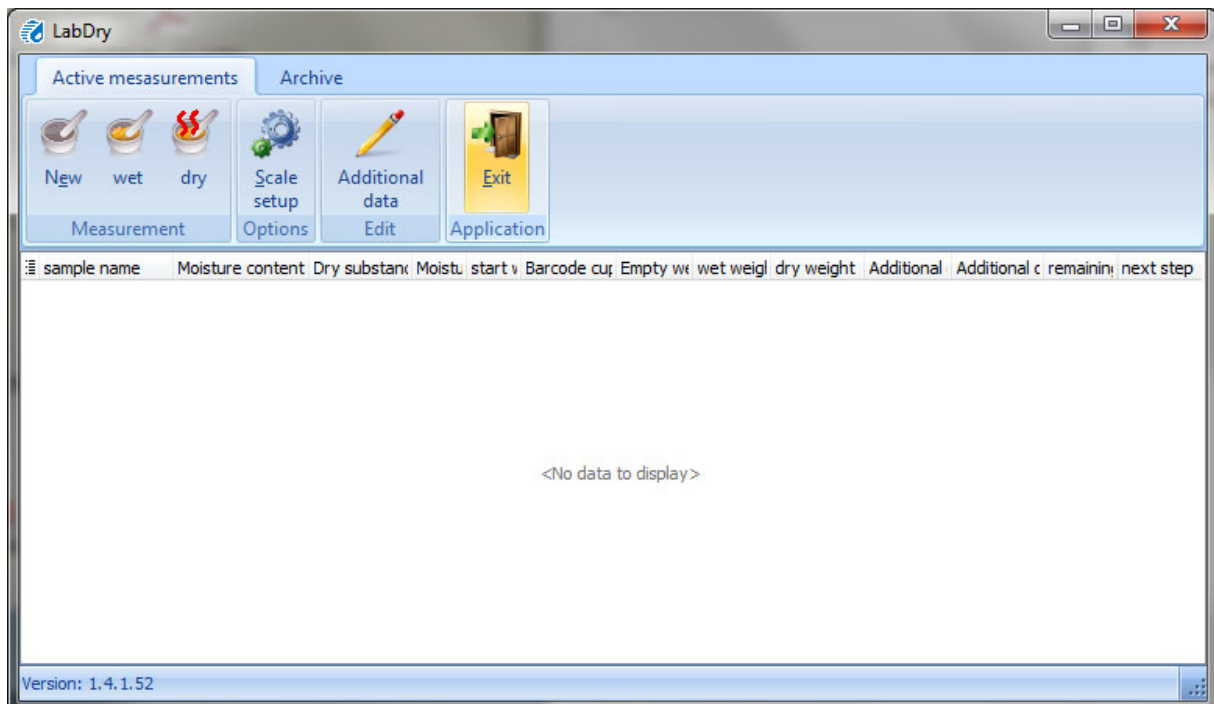
Pressing the button „Copy“ all selected measurements are transferred into the clipboard. This data incl. headline is now available for further analysis.

Export of measuring series into MS Excel



The button „Export measurement“ copies all selected measurements into an Excel file. This data incl. headline is now available for further analysis.

Exit



Pressing the „Exit“ button the programme is closed. All active measurements remain in the „active measurements“ tab and can be completed at a later time.

Individual optical settings

The tabs „active measurements“ and „archive“ can be modified individually. The programme offers further parameters that can be displayed. The factory-provided version contains a well-arranged selection of parameters, which can be modified according to your requirements.

Archive:

<input checked="" type="checkbox"/>	Nr.
<input checked="" type="checkbox"/>	Barcode cup
<input checked="" type="checkbox"/>	start wet weight
<input checked="" type="checkbox"/>	Empty weight
<input checked="" type="checkbox"/>	Weighing time
<input checked="" type="checkbox"/>	sample name
<input checked="" type="checkbox"/>	wet weight
<input checked="" type="checkbox"/>	wet time
<input checked="" type="checkbox"/>	dry weight
<input checked="" type="checkbox"/>	Dry substance
<input checked="" type="checkbox"/>	Dry time
<input checked="" type="checkbox"/>	Moisture content
<input checked="" type="checkbox"/>	Moisture
<input checked="" type="checkbox"/>	Additional data 1
<input checked="" type="checkbox"/>	Additional data 2

Measurement:

<input type="checkbox"/>	ID
<input checked="" type="checkbox"/>	sample name
<input checked="" type="checkbox"/>	Moisture content
<input checked="" type="checkbox"/>	Dry substance
<input checked="" type="checkbox"/>	Moisture
<input checked="" type="checkbox"/>	start wet time
<input checked="" type="checkbox"/>	Barcode cup
<input checked="" type="checkbox"/>	Empty weight
<input checked="" type="checkbox"/>	wet weight
<input checked="" type="checkbox"/>	dry weight
<input type="checkbox"/>	Weighing time
<input type="checkbox"/>	wet time
<input type="checkbox"/>	Dry time
<input checked="" type="checkbox"/>	Additional data 1
<input checked="" type="checkbox"/>	Additional data 2
<input type="checkbox"/>	Status
<input checked="" type="checkbox"/>	remaining time
<input checked="" type="checkbox"/>	next step

IMPORTANT: The software offers 3 different possibilities of displaying the moisture value.

1. Water content

The water content is determined based on the total mass:

$$\%Wg = \frac{Mn - Mt}{Mn} \times 100$$

M_n: Mass with average water content

M_t: Mass of the dried sample

%Wg: calculated water content (according to the norm CEN/TS 14774)

2. Dried matter

The dried matter is calculated as follows:

$$\%TS = 100 - \%WG$$

%WG: water content

%TS: calculated dried matter

3. Moisture

The moisture is determined based on the dry mass:

$$\%F = \frac{Mn - Mt}{Mt} \times 100$$

M_n: Mass with average water content

M_t: Mass of the dried sample

%F: Calculated moisture value

Important points

!!! ESSENTIAL TO READ BEFORE STARTING A MEASUREMENT !!!

- Before each measurement the scale has to show a value of „0.00g“ without bowl.
- The scale has to be placed on an even surface. Additionally, the pedestals have to be adjusted until the dot is situated in the centre of the circle (see picture). Don't expose the scale to any vibration!
- The right COM port of the scale has to be entered in the software.
- The aluminium bowl has to be clean and free from dust → clean with compressed air
- The drying chamber has to be set to 105°C (+/- 2°C). The temperature should be checked periodically with an appropriate thermometer.
- The drying chamber's number of ventilations per hour has to be between 3 and 5.
- To prevent the absorption of moisture, the dry weight of the sample has to be determined immediately after taking the sample out of the drying chamber.



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