

# TEST SAMPLE EXTRACTOR FL-MIKRO-LAB-KOMPAKT WITH MEASURED VALUE EVALUATION LAPTOP/PC



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## TECHNICAL DATA

### FL-MIKRO-LAB-KOMPAKT:

|  |                           |
|--|---------------------------|
| Dimensions                                   | H: 170 mm / Ø: 110 mm     |
| Cover  | Highly resistant aluminum |
| Weight                                       | 2,8 kg                    |
| Temperature Range of the material to measure | 0-80°C                    |
| Volume                                       | 180 cm <sup>3</sup>       |
| Connection cable                             | USB A / Length: 3 m       |
| Measuring principle                          | Microwave / 433 MHz       |

### SYSTEM REQUIREMENTS OF EVALUATION-PC:

|                  |  |
|------------------|--|
| Operation system | WINDOWS 2000 SP4 / XP SP2 / VISTA 32-bit / 7 |
| Serial Interface | 1x USB 2.0                                   |

## 1. TEST SAMPLE EXTRACTOR FL-MIKRO-LAB-KOMPAKT

### 1.1 Construction



### 1.2 Starting Up

#### 1.2.1 Software Installation

Proceed SETUP.EXE from the included software CD and follow the steps.  
An Icon is created automatically on the desktop.

#### 1.2.2 Hardware connection

Connect the test sample extractor to your PC using the included connection cable.

### 1.3 Handling

Important information:

Before real moisture values can be displayed, a calibration has to be proceeded or a pre-calibrated calibration graph has to be operated. When measuring material with different ingredients and grain structure, you have to take several calibration graphs. You have to make sure the correct calibration graph is chosen in the evaluation PC when starting the measurement. Calibration curves without limit can be stored.

Generals:

Language Setting: Start the program click on ‚FILE‘ and choose ‚OPTIONS‘. Set your language. This setting is valid until it is manually changed through the user or if the software is re-installed.

#### 1.3.1 Calibration – material assignment

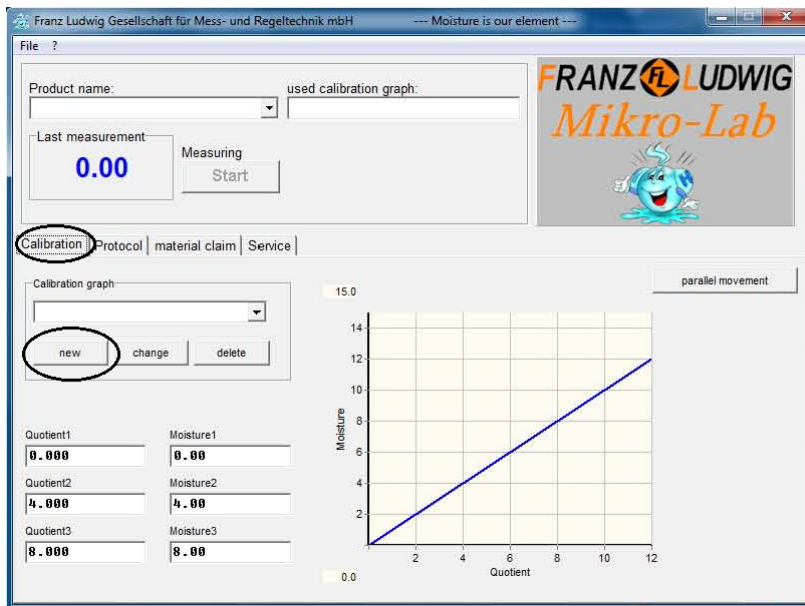
Important information:

You can choose two possibilities of calibration:

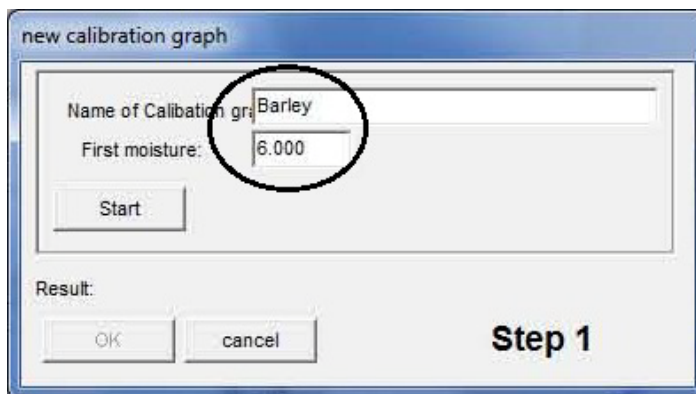
1. Calibration by weight–OUR RECOMMENDATION (Chapter 1.3.1.1)
2. Volumetrically calibration (Chapter 1.3.1.2)

##### 1.3.1.1 Calibration by weight

- Prepare **three** material samples to fill the FL-MIKRO-LAB-KOMPAKT during the calibration. One sample should be at the lower and the other on the upper moisture range which can be expected during your measuring operation. (in this example 6% and 12%). The third sample has to be dried to 0%.
- Pay attention that FL-MIKRO-LAB-KOMPAKT and PC are connected during the whole processing.
- Choose ‚CALIBRATION‘ tab and click on ‚NEW‘:



- Enter the material's indication and the **first (lower)** moisture value.



Probennehmer FL-Mikro-Lab-Kompakt mit LAPTOP / PC

- Fill the FL-MIKRO-LAB-KOMPAKT with the **dry** material (0% moisture).



- Remove the material from FL-MIKRO-LAB-KOMPAKT and weigh it to determine the filling weight. (In this example 115 g).

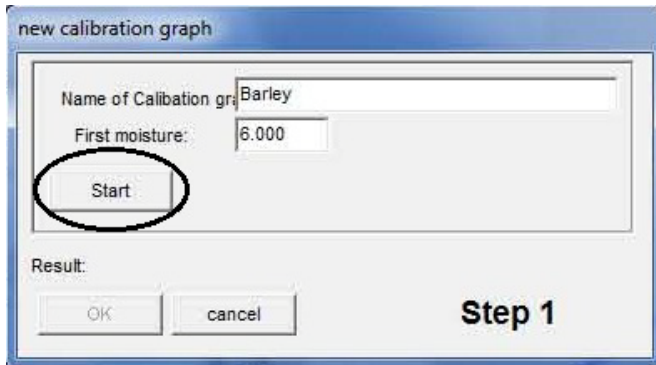


- Now weigh the same quantity from the material with the **lower** moisture (in this example: 115g of 6%) and fill the FL-MIKRO-LAB-KOMPAKT.

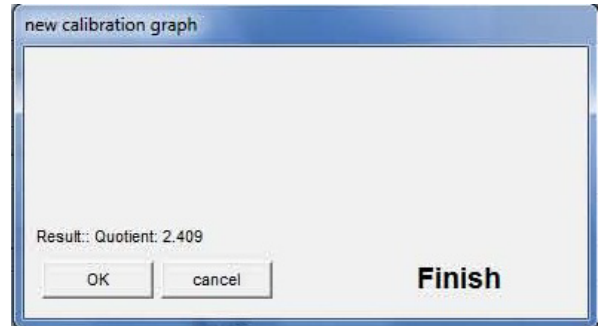
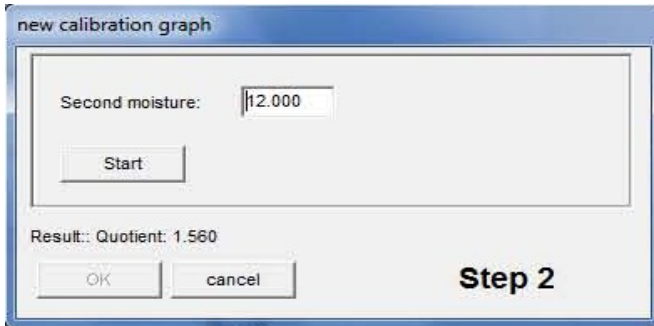


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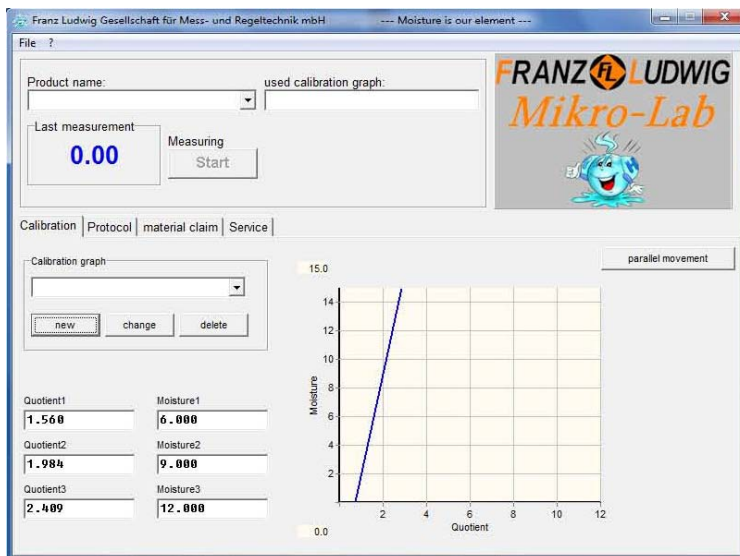
- Now, close the FL-MIKRO-LAB-KOMPAKT and click on „START“ to take the **first** moisture value.



- After the first value is taken, the following picture appears. Please enter the **second** moisture value (in this example 12%) and re-fill the container with this material. Proceed the same as for the first moisture value (6%). At the end the calibrated calibration graph appears. When the screen shows ‚FINISH‘, confirm this calibration graph with ‚OK‘.



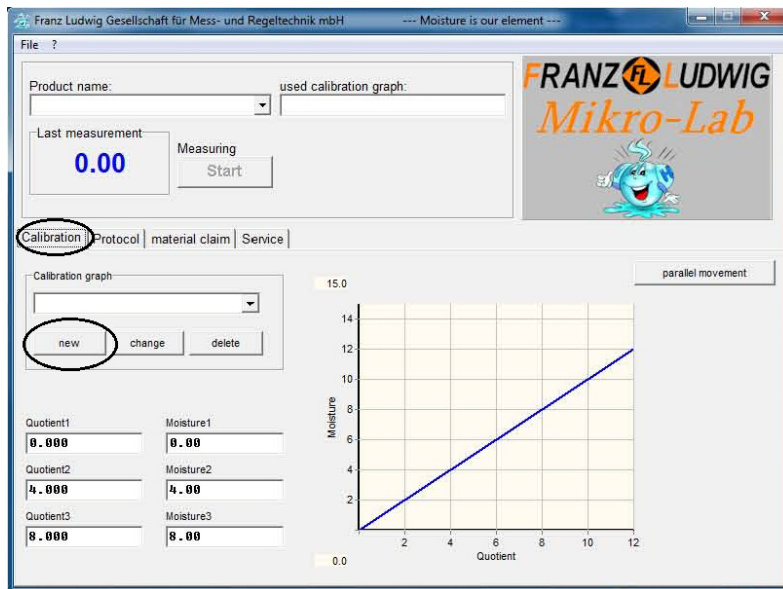
- After choosing ‚OK‘, the graph is stored and is graphically displayed.



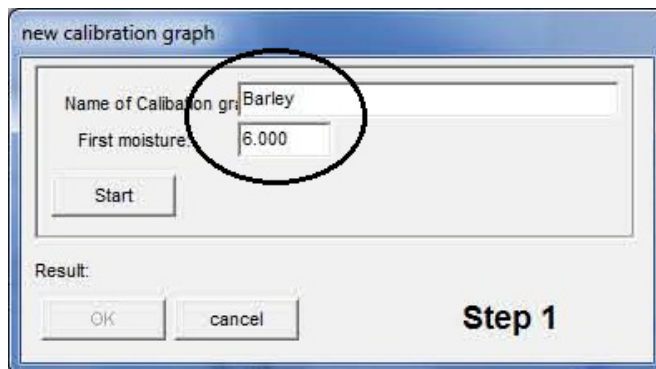
Continue with “1.3.1.3 Material Assignment”.

**1.3.1.2 Volumetrically calibration**

- Prepare **two** material samples to fill the FL-MIKRO-LAB-KOMPAKT during the calibration. One sample should be at the lower and the other on the upper moisture range which can be expected during your measuring operation. (in this example 6% and 12%). Remark: The second value should not be 0%.
- Pay attention that FL-MIKRO-LAB-KOMPAKT and PC are connected during the whole processing.
- Choose tab ‚CALIBRATION‘



- Click now on the ‚NEW‘ button in the calibration graph field and enter the calibration graph’s indication and the first moisture value of the calibration.

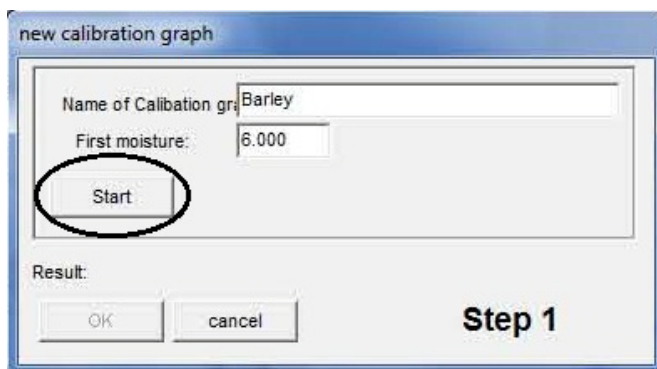


- Fill now the FL-MIKRO-LAB-KOMPAKT with the dryer material (in this example 6%).

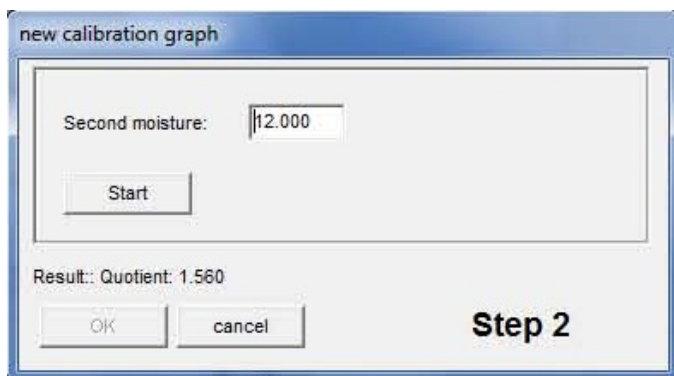




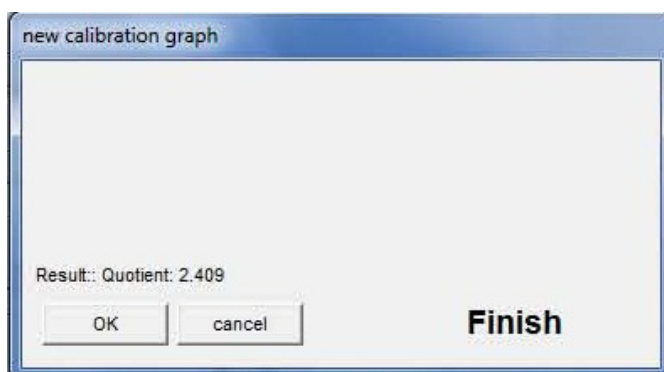
- Click now on „START“ to take the **first** moisture value.



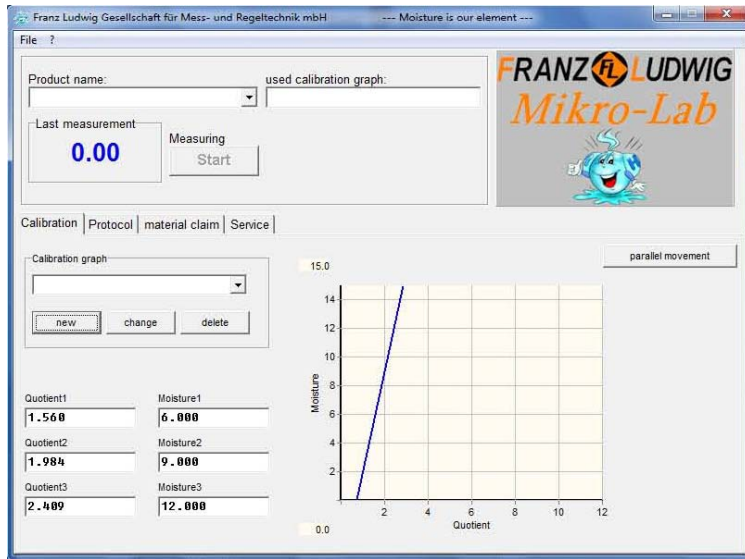
- After the **first** moisture value has been taken, the following picture appears. Enter now the **second** moisture value (in this example 12%) and re-fill the container with this material. Proceed the same as for the first moisture value (6%). At the end you will receive the calibrated calibration graph. When the screen shows ‚FINISH‘, confirm this calibration graph with „OK“.



...  
...  
...

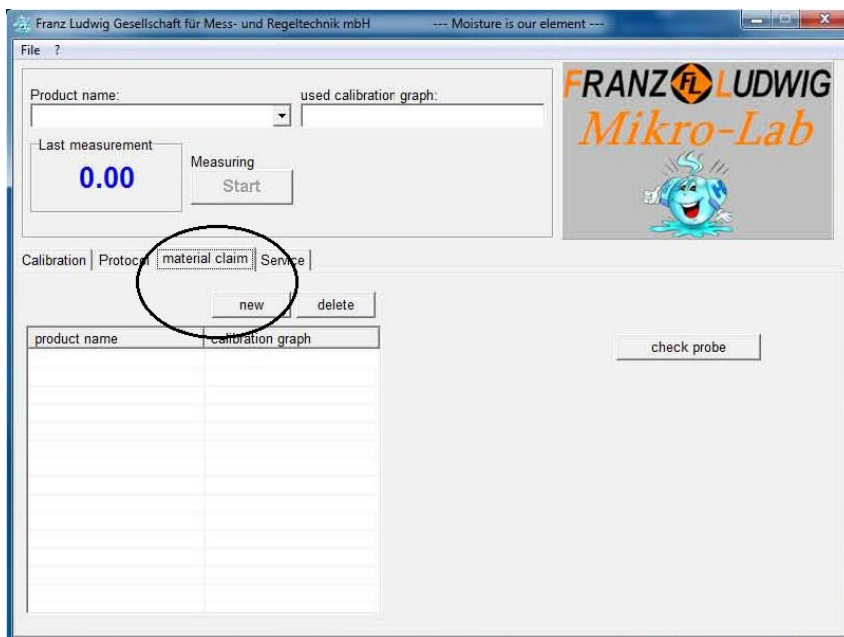


- Now the calibrated and the stored calibration graph is graphically displayed on the indication ‚BARLEY‘.

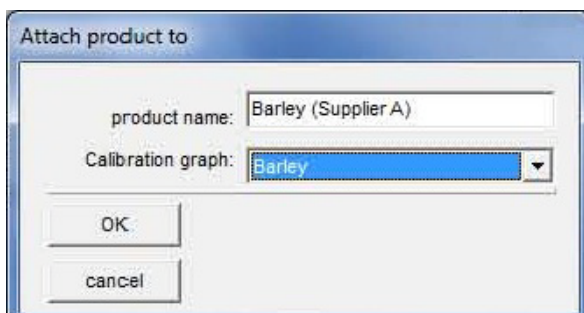


### 1.3.1.3 Material Assignment

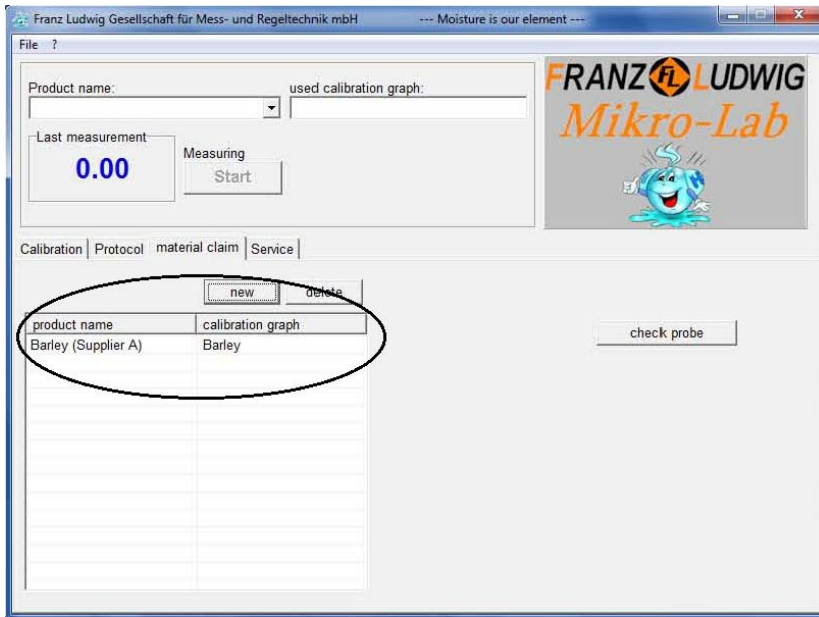
- Choose tab „MATERIAL CLAIM“ then click button „NEW“.



- Enter now the product indication and assign the calibrated calibration graph. Then confirm with „OK“.



- The assignment is completed by now and is added to the listing.

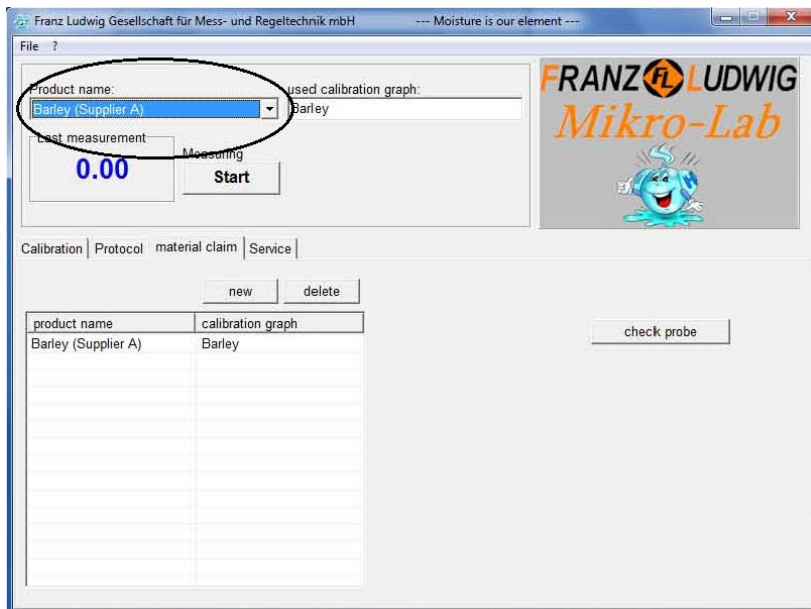


### **1.3.2 Measuring Operation**

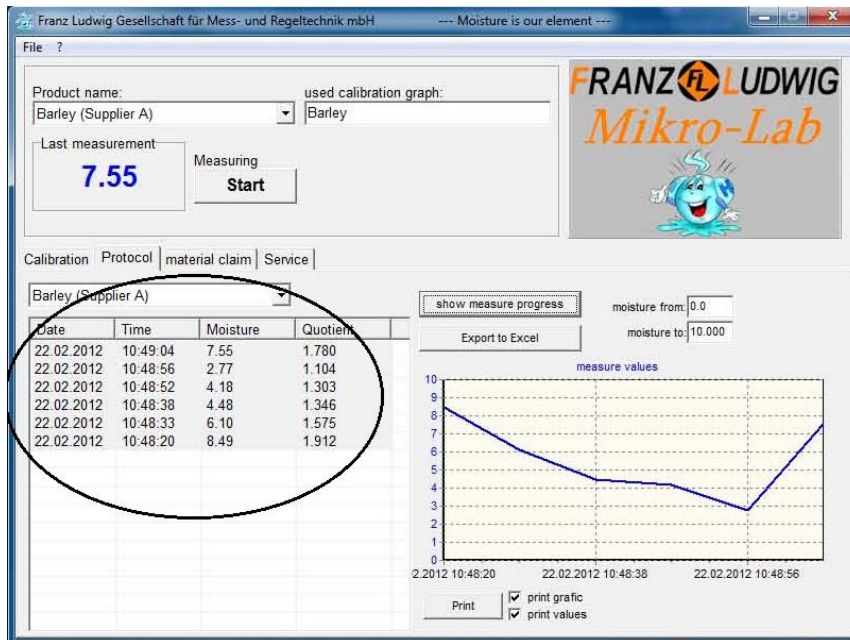
Start the program...

The currently chosen product ('Product name') and the assigned calibration graph is shown at the upper part of the displayed window.

- Choose product name of the material to measure.



- Fill the FL-MIKRO-LAB-KOMPAKT and click the button ,START' to start the measurement. The measured moisture is displayed in blue and even recorded simultaneously.
- All taken moisture values are listed at tab ,PROTOCOL'..  
 To display a certain measured value course, mark the requested and recorded values and click at the button ,SHOW MEASURE PROGRESS'.



## 1.4 CLEANING

Make sure no material remains are soiling the test sample extractor nor the probe's measure surface after emptying the FL-MIKRO-LAB-COMPACT. Material remains can be removed with a brush or air pressure. Material stockings on the probe's surface can be removed with common household cleaners.

## 1.5 ERROR DETECTION

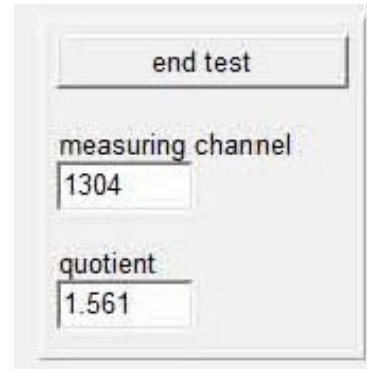
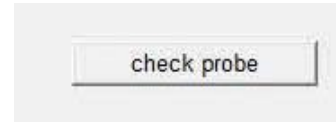
### 1.5.1 Inexact measure results

- Calibration has be done?
- Did you take several material specific calibration curves for the measuring of very different materials (compound, structure)?
- Did you assign the corresponding calibration curve to the product designation?
- Soiling and build-ups on the probe's measure surface and the inner sample container are impossible?
- Has the FL-MIKRO-LAB-KOMPAKT been filled completely before measurement?
- Is the material sample to measure homogeneously mixed every time?
- Are the moisture values reliable evaluated with the calibration or the comparative measurement through reference system (ex. Drying oven)? You probably have to proceed control dryings.

### **1.5.2 Check of moisture probe**

At tab MATERIAL CLAIM you have the possibility to get the probe's measure channel displayed when touching the button CHECK PROBE. The displaying of the probe's measure channel allows the function checking of the microwave moisture probe. The "measuring channel" with uncovered probe has to lay about 2500 (+/-300). When you fill the FL-MIKRO-LAB-KOMPAKT up to 50% with water, the value should fall to 400 (+/-200).

Should the values of your probe lay out of this range, please contact one of our technicians for further steps. The "Quotient" is a linking up with "measuring channel" and indicates the non-calibrated measured value.



## **1.6 INTERFERENCE WITH ISM-FREQUENCIES**

Radio frequency devices use particular ISM-Frequencies (Industrial Scientific and Medical), which are international prescribed. Our Microwave Moisture Probe, which counts as this type of device, is operated inside the frequency range from 433,05 to 434,79 MHz. Radio frequency ranges are utilized in many commonly known devices. Example of these devices as follows:

- Radio Alarm Systems
- Mobile Transmitters
- Remote Controls
- Vehicle Opener
- Garage door Opener
- Wireless Movement Detectors

On account to the huge number of ISM-Devices it can lead to mutual influences or interferences, if they are operated in direct environment. The radio signals might be received from others as the expected receiver. To avoid each kind of interferences, we recommend, that your other operating ISM-devices, which use the range from 433,05 – 434,79 MHz as well, not be used in immediate vicinity of our Microwave Moisture Probes resp. be laid out for other ISM-Frequencies. This goes especially for possible danger zones as for example cranes, roll-doors, buckle conveyor belts, e.g. In researches and tests, which had been done by us and outside institutes, have been found out, that the from us used frequency range from 433,05 to 434,79 MHz is the most advantageous to get reliable and accurate Moisture Measurement with our Microwave Moisture Probes.

**Please feel free to contact us. We look forward to answering any questions you may have.**