



WAGENINGEN
UNIVERSITY & RESEARCH

Texture analyser with climat chamber included

<https://search.labfacilities.wur.nl/SearchDetail.aspx?deviceid=27c937b4-75f5-4553-b908-b59963a30dbb>

Brand

Instron

Type

5564

Contact

Jos Sewalt (jos.sewalt@wur.nl)

Organisation

Agrotechnology and Food Sciences

Department

Food Process Technology

Description

User
Protocol
Instron
Texture analyser Principal:
The texture analyser can only do two things;
Move up and move down and determine extremely precise the distance moved. The movement can be measured with the transverse (default) and optical with an Extensiometer (is not installed but it is in stock). The first option exactly measures how far the probe goes up or down. For the extensiometer two dots are placed on the sample (only for extention). The extensiometer measures the movement of the dots. The advantage is that grip effect are eliminated.
And measure the force necessary for the movement. For this load cells are used. Safety:
The texture analyser is developed to deform materials. For this it has the capacity to use a force of 5000N.

- This force is enough to destroy the climat chamber. Be sure that the lower safety limit of the Texture Analyser is set properly.

- This force is enough to destroy the load cells. The load cell is the most critical measurement device connected to the texture analyser. We have two load cells; 100N and a 2000N. Overload will irreversible destroy the load cell. Costs: €7300

- Always work in Load cell Protect mode!

- In the load cell menu, Always set the safety limits to 95% of his maximum. As well positive and negative. And activate this protection.

- In the Run-setup, Use always the pre-load option. This means the machine itself will go to sample probe until a pre-set load is achieved.

- This force is enough to give serious damage to your hand/ fingers. While the machine is moving (also in Manual mode), never keep your hand near the moving parts.

For compression test; Due to breakage of the sample it is obliged to use safety glasses during the test!

Start Up:

- Install the correct load cell. This must be done by one of the technicians!

- Switch on:

- Texture analyser. The load cell needs a warming up time of 30 minutes.

- Switch on the computer, for this no password is needed.

- Start the Instron Bluehill software.

First the system configuration will be downloaded to the computer.

Security login: username = User password = users

- Go to the right top of the screen: "TRANSDUCER SETUP"; LOAD tab

- Remove all the mass from the Load Cell (remove the probe).

- Click on BALANCE; the read out from the Load Cell will go to 0.000N

- Click on Calibrate, calibration type on "automatic".

Go to the right top of the screen:
"TRANSDUCER SETUP"; LIMITS tab

- Set the Max/ Min limits to 95% of the Load Cell max.

- Activate both using "ENABLED"

- Go to the left top of the screen.

- Specimen protect, ENABLED
for Load Cell 100N, max = 0.5N
for Load Cell 2000N, max = 10N

- Also activate the Specimen Protect option using the keypad on the machine. Here the light must start blinking.

Specimen protect works only when there is no method running. The machine will ensure that the set max load will not exceeded.

- After the configuration is downloaded the keypad of the machine becomes active. With this the transverse can be moved, fast with the button and slowly with the wheel.

- Connect the proper tools. For compression it is important to define the compression surface well. For this we have a number of possibilities. Some examples are shown below:

Probes available for compression tests.

Nr1. is a drill holder with varying punches until 10mm diameter. Nr2. Is a smaller chisel, effective length of the cleaver is 12mm. Nr3. Is a larger chisel, length of the cleaver is 30mm. Nr3. Is a cylindrical compression tool with a diameter of 50mm.

For Extension measurements it is important to exclude the effect of the grip. This can be due to deforming the material by clamping it in the grip. To minimise this error a dogbone shaped sample can help. Another problem is the slip of the material out of the grip. To prevent this, you can glue (with tape) sandpaper or velcro to the inside of the grips.

The grip holder to clamp the specimen.

The dogbone shaped specimen to minimise the risk of tearing the specimen due to clamping.

The Load Cell is very sensitive for rotational forces. Never use a tool to connect a probe or camp to the Load Cell. The Load Cell is also rather sensitive for movements side way. As well right/ left as front back. Prevent this!

- The Texture Analyser is equipped with an additional mechanical protection. This are two screws on the left of the machine. When the Transverse reach this level the vertical movement will be stopped. On the screen the warning "safety tripped" will appear. Go to the left top of the screen, Frame tab. Enable frame!

- To develop a new method is only allowed to experienced users or with assistance of one of the technicians.

- In TEST a developed method can be run. New methods have first to be tested by an experienced user (technician)

After use clean the machine and the used clamps or probes and return them to the drawer.

Shut down the computer and switch off the Texture Analyser.

Technical Details

The texture analyser is equipped with two load cells. these cells are interchangeable.

nr 1 is a 100N max load

nr 2 is a 2000N max load.

The TA can be used for as well compression as tensile tests.

Using the combination with the climate chamber makes it possible with the climate chamber makes it possible to perform test at varying temperature and humidity.

Temperature range: 15 - 80 °CRH range: 0 - 90 %