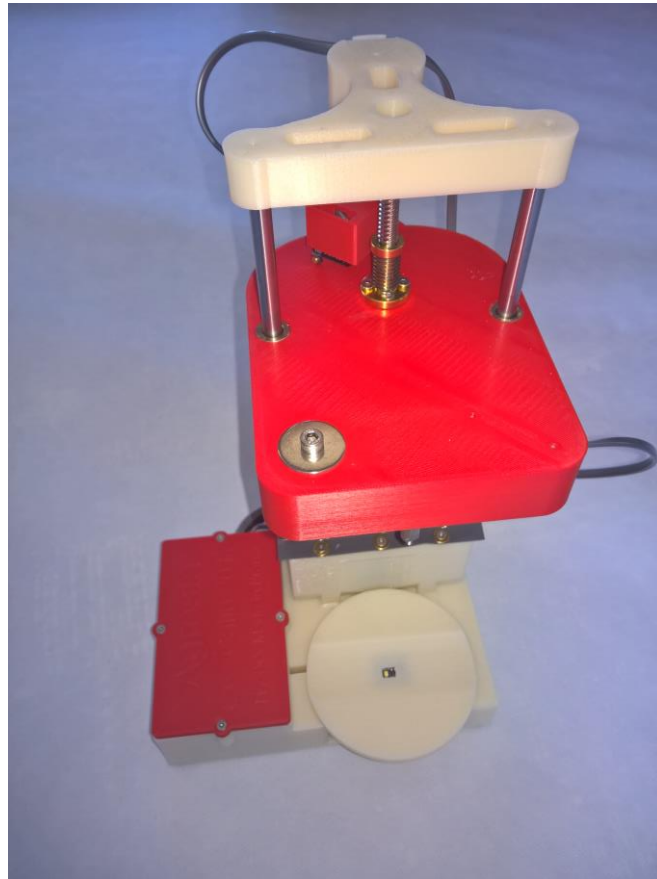


The Agrosta®Texturometer Version 2 has been designed in 2016  
In order to provide to researchers a simple and reliable tool to determine : Freshness, spreadability, Tenderness, Springiness, Gumminess, Hardness, Firmness, Consistency, Fracturability etc of a variety of Food Products and soft materials



Many thanks for having acquired an Agrosta instrument

Your package contains :

- The instrument itself
- 1 Beakers and / or one table
- 5 different tips
- A power supply & a USB cable
- The software for windows on USB key (With video for easy setup of the machine)
- A certificate of conformity
- A manual

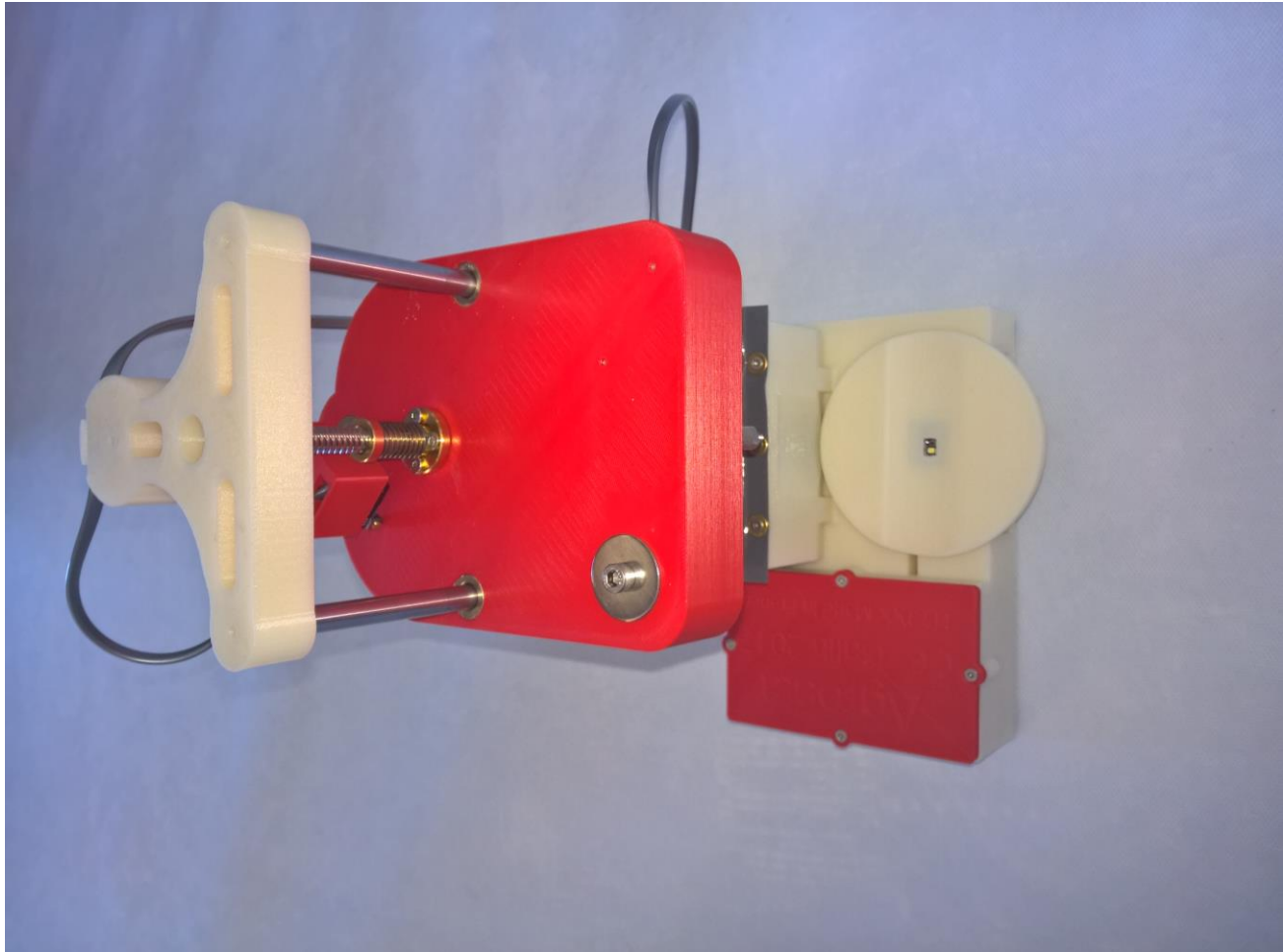
## Agrosta®Texturometer has been designed and produced in France by Agrosta

- The motor is a Nema 23 stepper motor
- There are 2 microprocessors, one is measuring and communicating with the PC, the other one is managing the movements and the motor (Both motherboards come from USA)

LOAD RANGE (LOAD CELLS TYPES AVAILABLE)	750 g 1 Kg 5 Kg 20 Kg
AVERAGE ACCURACY	0,2 g for 10 Kg
POSITION RANGE	0 to 220 mm
TEMPERATURE MEASURING RANGE	0 to 90 °C
COMPATIBILITY	Windows 2000 XP Vista Windows 7 Windows 8 Windows 10
POSITION ACCURACY	0.03 mm
SPEED	Up to 100 mm/s
SPEED ACCURACY	+/- 0.1% of set speed
CUSTOM DESIGN FIXTURE AND PROBE	YES (3D printing, immediate result)
CUSTOM SOFTWARE	Option
CUSTOM ELECTRONICS	Electronics can be customized Additional features available
OPEN SOURCE	Code provided to pilot the machine Standard Nema 23 motor Standard Arduino boards Low cost spare parts
DESIGN Generation	~ 2016
TEMPERATURE PROBE	No
CALIBRATION	Check using Lab scale
VARIETY OF BASE PLATES AND PROBES	More than 100
TEST PARAMETERS	10
PRE-CONFIG TEST MODES	8 + Calibration check
MADE IN	FRANCE
DATA EXPORT FROM SOFTWARE	Excel, Word, Xml, Jpg
WORKS WITHOUT COMPUTER	NO
GUARANTEE	2 Years full guarantee
STATISTICS	Unlimited data

## Starting :

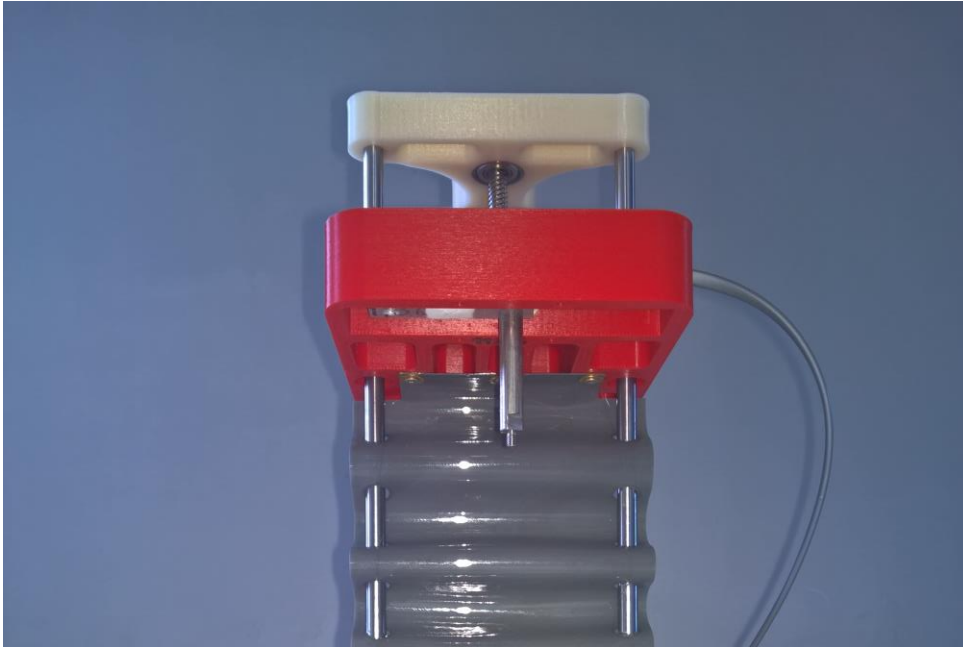
- Install the software on your PC before connecting the device, accept driver setup
- Connect the device with the USB cable (only to the PC, not to sector power)



- Wait till it is recognized, and driver configured
- Plug the device to the power (100 to 240 V)

## Operating :

- You can chose if you use the beaker or the plate according to the products you want to test
- Use the longer axis when you use beaker, and the shorter when you use the plate



- In case of **EMERGENCY = REMOVE POWER PLUG !**
- Start the software from the PC, and select the COM port corresponding to your device (If you don't know which COM port is used by the machine, just try each of them, click on "OK", and launch a cycle

## First Cycle :

Click on your device

COM1  
COM7

Erase data

Export to Excel  
Erase  
(Production batch analysis)

Grams  Mill Lb

OK

Inst Value

101	2 964	5 551	6 589	5 060	2 960	1 491	1 628	3 310	5 672	7 762	5 929	3 997	1 735	254	114	1 019	3 057	5 625	6 650	5 141	1 594	1 737	3 391	5 737	7 093	8 565	7 696	6 069	4 169	1 898
-----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-----	-----	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

### 1 - Select COM

### 2 - Click on OK

### 3 - Select a pre-config program

Statistics

Average 0

St Dev 0

Mini 0

Maxi 0

Export batch and Statistics to Excel

2 PRESS FAST 5mm

2 PRESS FAST 2mm

2 PRESS SLOW 10mm

2 PRESS SLOW 5mm

1 PRESS SLOW 5mm

1 PRESS SLOW 3mm

1 PRESS SLOW 2mm

FRUIT PENETROMETRY

### 4 - Launch Cycle

High Speed

Time between

Low Speed

Time between

Contact detection when grams

Return Speed before second pressure

Time between

Backlash Compensation of machine

In 1/10e

Return stroke for second pressure

In

Pause time before second press

In Milliseconds

Low Speed second pressure

Time between 2

Stroke for second pressure

In

## Parameters :

You can use the pre-configured programs, or apply your own parameters

Your last configuration is recorded by the software, and will be applied the next time you will start the soft

You can adjust and select the following parameters with the software :

- “a” + fast speed in microseconds (half of time in microseconds between 2 steps of motor, 400 steps for 1mm stroke, minimum 50µs)
- “b” + slow speed after first contact with the sample, in microseconds
- “c” + stroke after first contact with sample in 1/10 of mm
- “d” + threshold in grams (For how many grams does the machine consider that the tip is in contact with sample), we recommend a minimum of 50 grams
- “e” + first return speed in µs
- “f” + backlash compensation in 1/10 of mm (Mechanical clearance compensation)
- “g” + second slow speed in µs, if not indicated, the machine does not make a second cycle (Second cycle is used to determine springiness)
- “h” + second stroke in 1/10 of mm
- “k” + return stroke between first and second pressure, in 1/10 of mm
- “t” + waiting time between the 2 cycles

The curve is displayed, and you have the choice between 3 buttons :

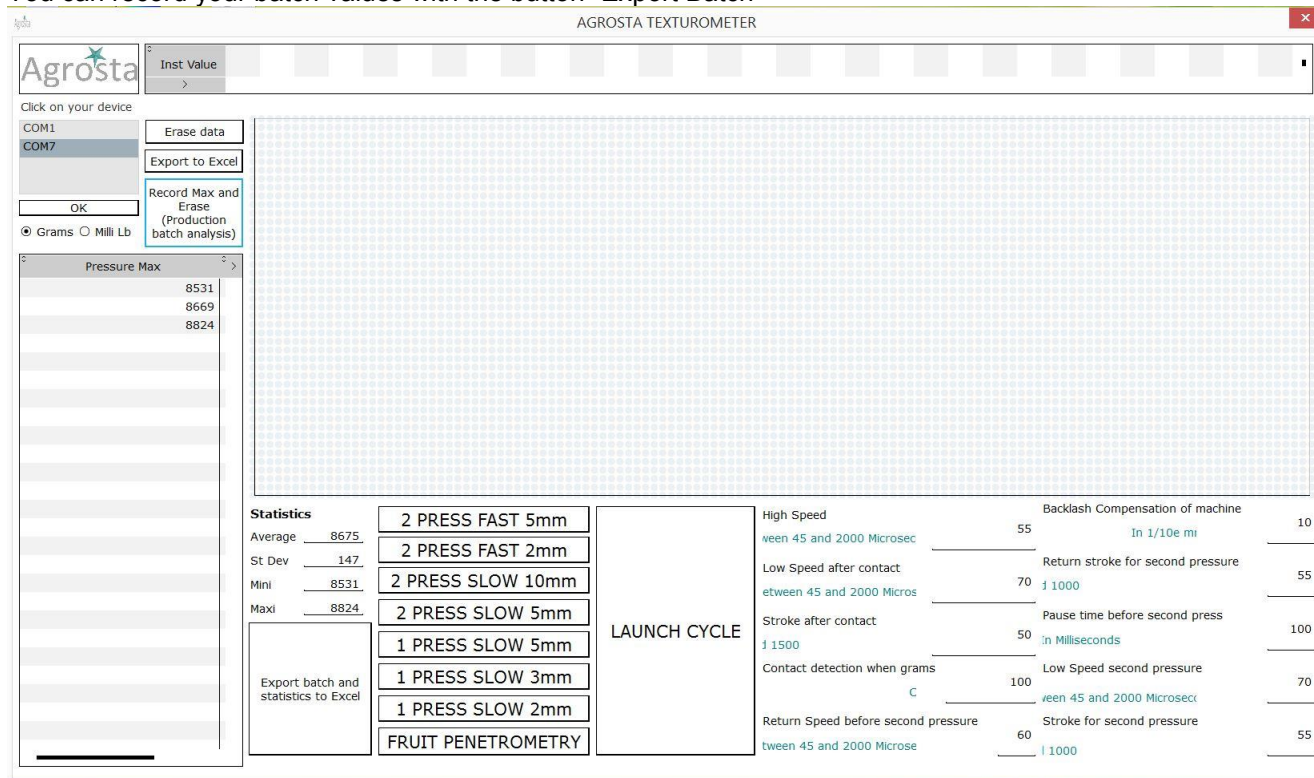
- Erase data
- Export to Excel the raw data
- Record maximum + Erase

This last button is very useful if you want to use the software for production issues

In this case, you want to manage batches of samples, and obtain statistics for a large number of samples.

This buttons records the maximum in the chart “Pressure Max” and statistics are automatically calculated for your batch

You can record your batch values with the button “Export Batch”



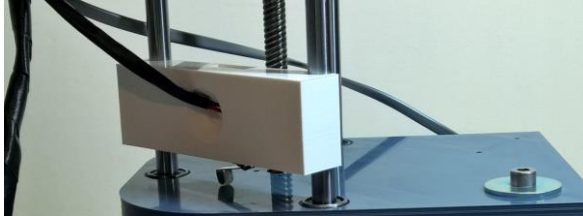
The screenshot shows the Agrosta Texturometer software interface. At the top, it says "AGROSTA TEXTUROMETER". Below that, there's a "Click on your device" section with "COM1" and "COM7" options. A "Pressure Max" graph is visible on the left, showing three data points: 8531, 8669, and 8824. Below the graph, there's a "Statistics" section with the following data:

Statistics	Value
Average	8675
St Dev	147
Mini	8531
Maxi	8824

Below the statistics, there are several buttons for different test programs: "2 PRESS FAST 5mm", "2 PRESS FAST 2mm", "2 PRESS SLOW 10mm", "2 PRESS SLOW 5mm", "1 PRESS SLOW 5mm", "1 PRESS SLOW 3mm", "1 PRESS SLOW 2mm", and "FRUIT PENETROMETRY". A "LAUNCH CYCLE" button is also present. On the right side, there's a "High Speed" section with various parameters and values, and a "Backlash Compensation of machine" section with a value of 10. The interface also includes buttons for "Erase data", "Export to Excel", and "Record Max and Erase (Production batch analysis)".

## Changing configuration :

It is recommended to move the upper endstop in order to adapt it to the size of your sample (This is in order to save time) – The white piece on the photo :



It slides along the metal axis

The machine will always go back to HOME position in contact with this Endstop

## Using your own software to communicate with the machine (Advanced configuration) :

The machine communicates on a very simple way with the computer

Just write on the COM (Serial port) corresponding to the machine the parameters as follows :

```
a60b400c55d150j1
```

This example is for only one stroke of 5.5 mm length after contact. Contact is detected at 150 grams

The instruction j1 is to start the cycle

## Optional system to perform tensile strength tests (Maximum 10 Kg)

Screw the system on the load cell (first part), and place the second part inside the beaker case :

