

Computerized Servo Control Universal Testing Machine



Introduction:

A Computerised servo control universal testing machine (UTM) is a sophisticated piece of equipment used to determine the mechanical properties of materials and components. It is the modern, high-precision evolution of the traditional mechanical testing machine, integrating advanced electronics, closed-loop feedback systems, and powerful software to deliver unparalleled control, accuracy and data analysis.

Its ability to perform a wide range of tests (e.g., tensile, compression, bending, shear, peel, tear) on a vast array of materials, including metals, plastics, composites, textiles, rubber, and ceramics

Features:

- **Computer & Software:** This is the user interface and data hub. Modern software provides:
 - *Intuitive test setup and method creation.
- **Real-time graphical display of the stress-strain curve.**
- **Automated calculation of material properties (Yield Strength, Tensile Strength, Modulus of Elasticity, Elongation, etc.).**
- **Load Cell:** A highly accurate that measures the force applied to the specimen.
- **Extensometer:** An optional but crucial device that clamps directly onto the specimen to measure elastic elongation and strain with extreme accuracy.
- **Drive System:**
 - ***Servo Motor:** An electric motor that provides precise and smooth motion. It is highly efficient, quiet, and clean.
 - ***Ball Screw:** Translates the rotary motion of the servo motor into precise linear motion of the crosshead.

- Wide Range of Control Modes: Can seamlessly control tests based on Position, Speed, or Force, and can switch between them during a single test. Comprehensive data storage, reporting, and export capabilities.
- Versatility: A single machine can perform a vast library of different tests simply by changing the grips and selecting the correct software method.
- Powerful Data Analysis: The software automatically identifies key points on the stress-strain curve and generates detailed reports, eliminating manual calculation errors.
- Safety: Built-in software and hardware limits protect both the machine and the operator from overloads and other hazardous conditions.
- User-Friendly: Complex tests can be pre-programmed, allowing less experienced operators to run them reliably.

Meet Standard:

- TAPPI T-494, TAPPI T829, ISO 1924, ISO12625-4, AS/NZ1301.448s, BS EN ISO1924-2, CPPA D34, DIN 53112, SCAN P38
- ASTM D1683, ASTM D412, ASTM D4964, ASTM D5733 / 5735, BS 3320
- (Breaking Strength) ISO13934.1, ASTM D5035
- (Tear Strength) ISO13937.2, ASTM D2261
- (Single Yarn Strength) ISO2062, ASTM D2256
- (Seam Slippage) ISO13936.1/2, ASTM D434
- (Tensile) ASTM D828, ASTM D638, ASTM D882, ASTM D6319, ISO 1924, TAPPI T 494, EN 455-2
- (Peel) ASTM D3330, D1876
- (Tear) ASTM D1938
- (Seal) ASTM F88
- (Bond) ASTM F904
- (Puncture) ASTM F1306, ASTM D4032, ASTM D120, ASTM F1342, ASTM D5748

Specification:

Model	EI-UT1	EI-UT5	EI-UT20
Maximum Load Frame	100kg	500kg	3000kg
Load Cell Capacity	10, 25, 50, 100kgf	10, 25, 50, 100, 250, 500kgf	10, 25, 50, 100, 250, 500, 1000, 2000, 2500kgf
Machin Type	Bench Top		Floor type
Accuracy of Force	$\pm 0.5\%$		
Effective Measuring Range	0.2% ~ 100% (Full Scale)		
Measuring Accuracy	$< \pm 1\%$		
Resolution	Max. load 1/200000, constant the resolution		

Load Sensor	Basic configuration one or two sensors		
Effective vertical Space	600mm	800mm	
Test Speed	Up to 500mm/min		
Accuracy of Displacement	< ±1%		
Gauge Length of Elongation	Min span :10mm, Max range of deformation 1000mm Extended deformation span: 20mm, 25mm, 50mm, 100mm		
Accuracy of Elongation	< ±1%		
Safety	Crosshead travel limit protection, overload protection (software)		
Return Back	Manual or automatic operation, after the test, the crosshead return to initial position with the highest speed by manual or automatic operation		
Machine Size	4000m x 350 x 1000mm	660 x 480 x 1800mm	970 x 570 x 2150mm
Rate Voltage	240V, 50Hz		
Power	0.2kW	0.4kW	0.75kW
Weight	Approx. 80kg	Approx. 120kg	Approx. 300kg

Standard Accessories:

Name	Description	Quantity
Load Frame	100, 500 or 3000kg	1 set
Load Cell	High Precision Performance Celtron, USA S-type or low profile Load-Cell 	1 set
Motor	High Precision Performance Panasonic, Japan AC Servo Drive with Servo Motor 	1 set
Speed Reduction	Reducer, Gear Drive + Belt	1 set
Software	Professional TCP operating software - Advance version, Interface Card, LAN Data Cable, Perform Tensile Test, Compression Test, 3 Point Bending Test, Peeling Test, Adhesion Test, Shearing Test, Tearing Test & Machine Compliance Test	1 CD
Grip and Accessories	Appropriate tensile, compression or other fixtures	1 set
Tool Kits	Maintenance tool	1 set

Manual	Operation manual and software manual	1 set
New High Performance Computer System	OS: Window 11 Pro CPU: i3 RAM: 8GB DDR5 Memory SSD: 512GB Networking: Integrates LAN Microdoft Office 24" Color LED Monitor Canon Color Printer 	1 set

Software Feature:**1. The software description about desktop computer type servo tensile testing machine**

- Function of standard modular: provide users with the necessary applications to the test, covering ASTM, DIN, JIS BS.... And other testing standard specification.
- Tested product information: provide users with the data to set about the products, one time to input and re-use permanently for improving the accuracy, the data can be corrected by the formula automatically.
- Dual-report editor: provide users with the reported format that users choose (testing program add EXCEL reported format, Extend the previous single pattern of statements)
- The data's unit of length and force can be exchanged, unit of force is T, Kg, N, kN, g, lb, unit of length is mm, cm, inch.
- Auto-optimization of graphic scale, display the best measurement of graphics. It can test the moving exchange in graphics; it has the load –displacement, load – time, displacement – time, stress – strain load – 2 points extending maps and lots of graph compared.
- Test results can be export to output in EXCEL, WORD & PDF format.
- Testing result can be automatically preserved or manual preserved, after the test, it can automatically calculate the most strength, up and down yield strength, loop method, best method, non-proportional extended strength, tensile strength, compressive strength, tensile strength at any point, constant load extension, elastic modulus, rate of elongation, peel range of maximum force, minimum force, average force, total energy, bending modulus, x% load in break displacement, load x% in break displacement and so on. The test data can be stored in any disk.
- Software has a capability that can output the before data.

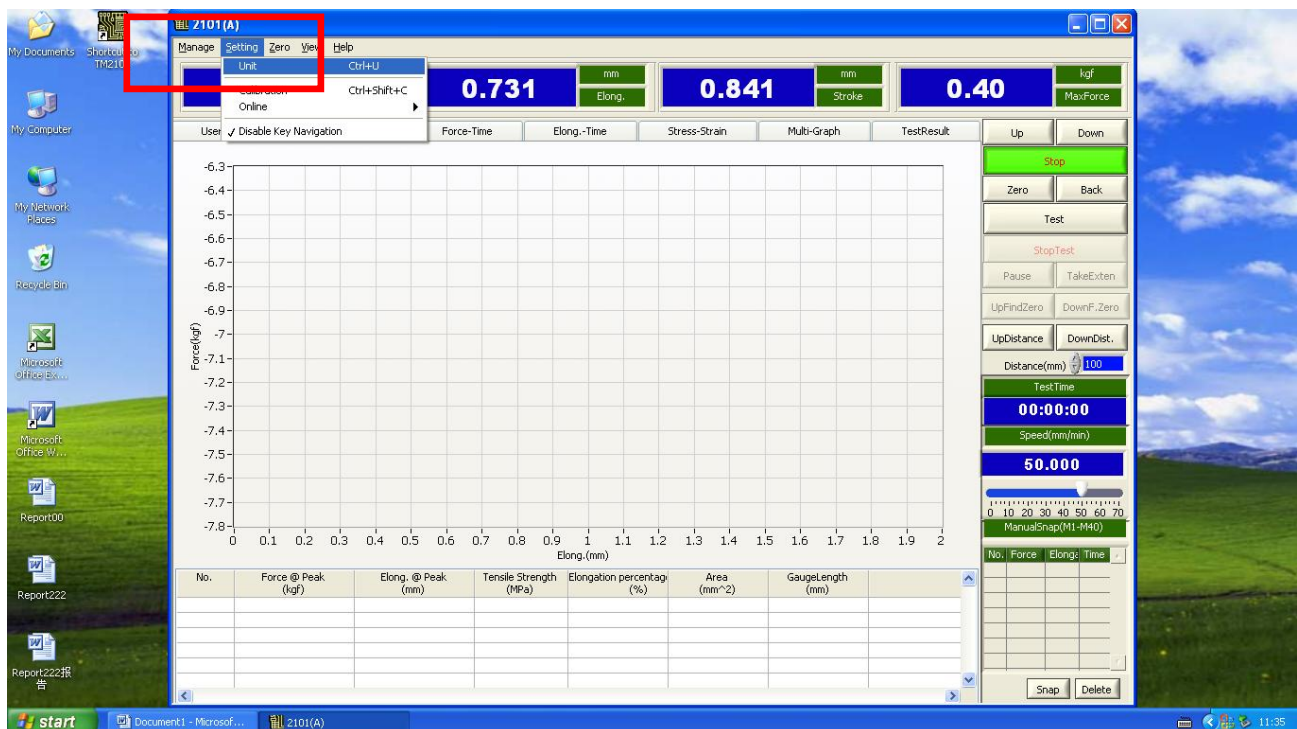
2. Items can be tested in the Desktop computer type servo tensile testing machine

Common items: (display data and calculation)

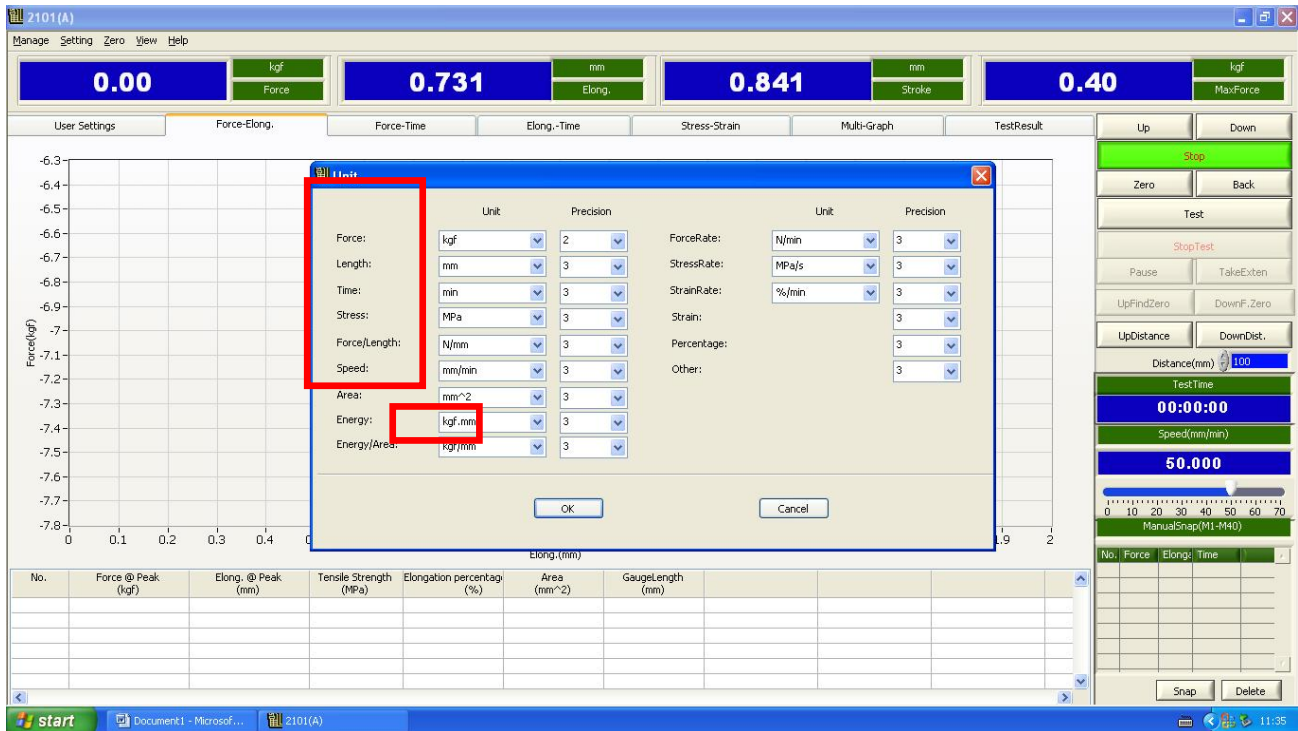
- Tensile stress
- Tensile strength
- Rate of elongation at break
- Fixed stress
- Rate of stress at break
- Stress Strength
- Tear strength
- The value of force at any point
- Rate of elongation at any point
- Pull-out strength
- Force of adhesion and the peak of force

Computer servo control material testing machine software operation interface

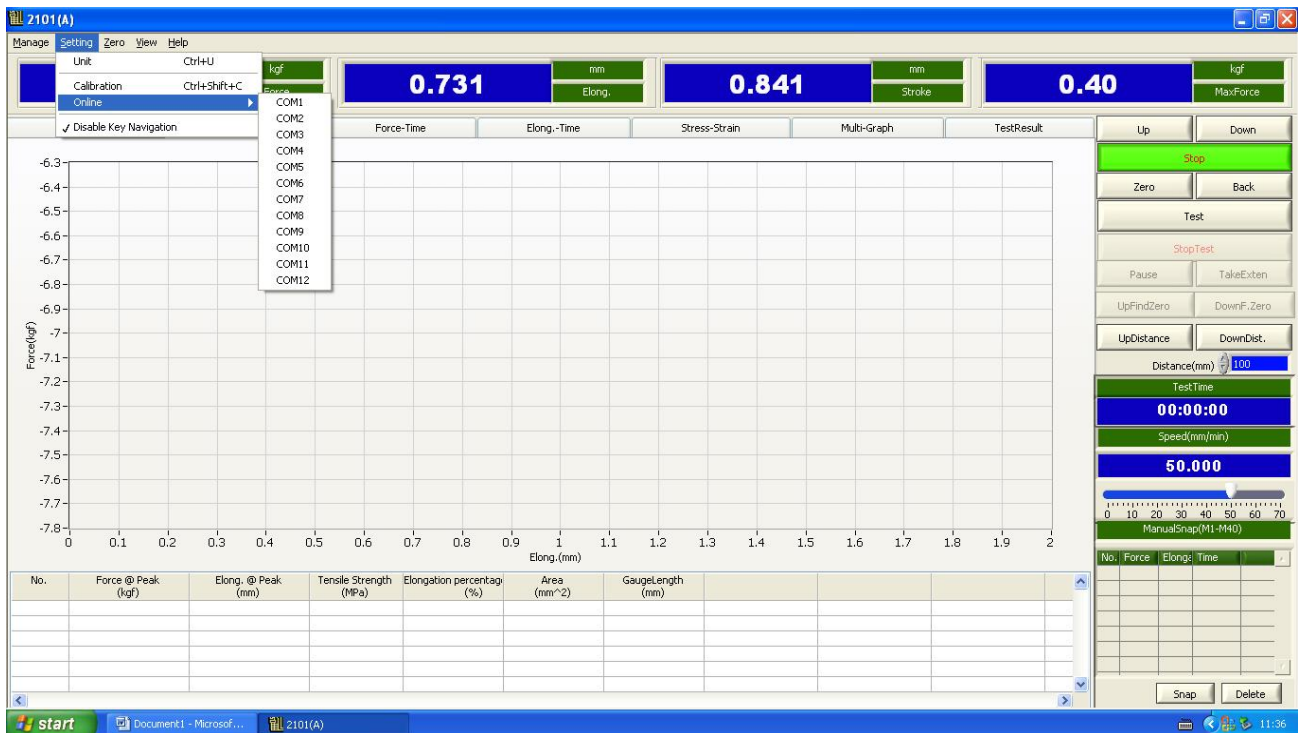
1. Choose you need units, setting==>unit



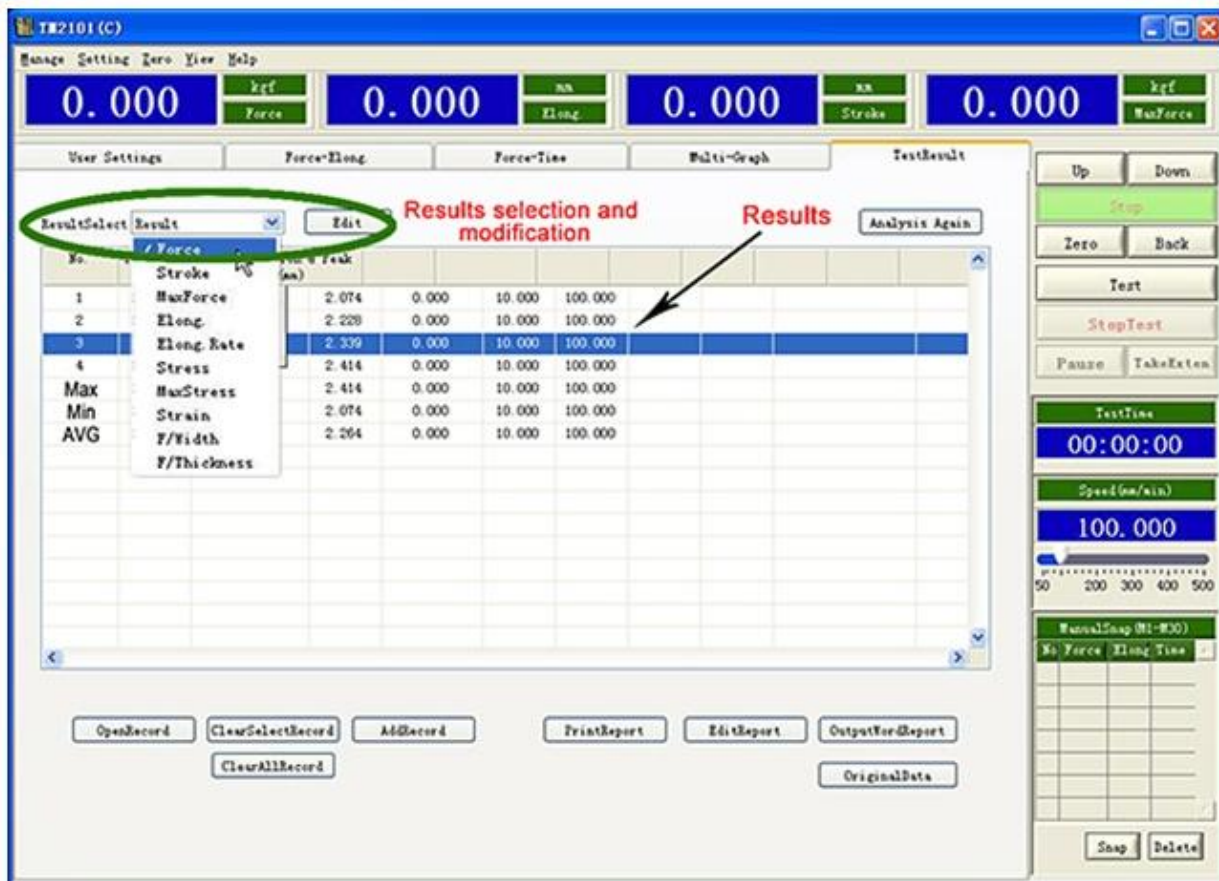
2. There are so many units, just choose you need.



3. Connect computer and software online. Setting==>Online==>COM1 or COM2..., after it show success connected.



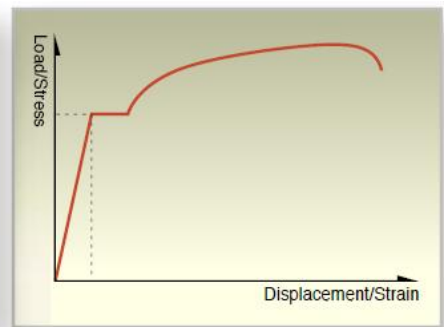
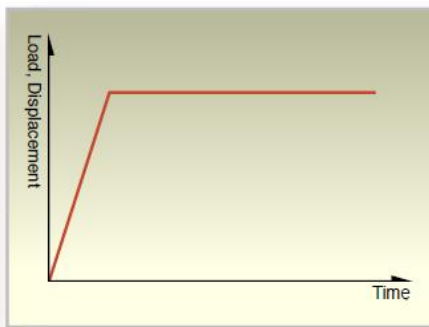
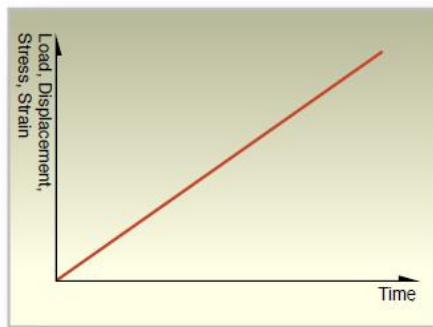
4. Test results



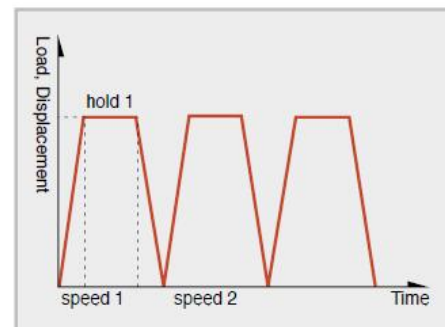
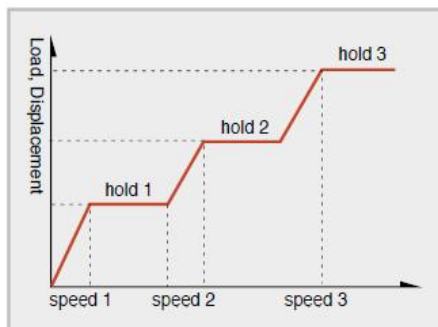
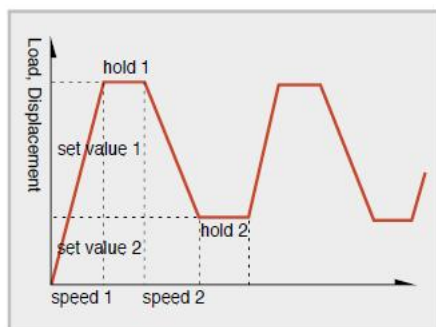
5. Computer servo control material testing machine test curve



STANDARD CONTROL MODES



SPECIAL CONTROL MODES (Optional):

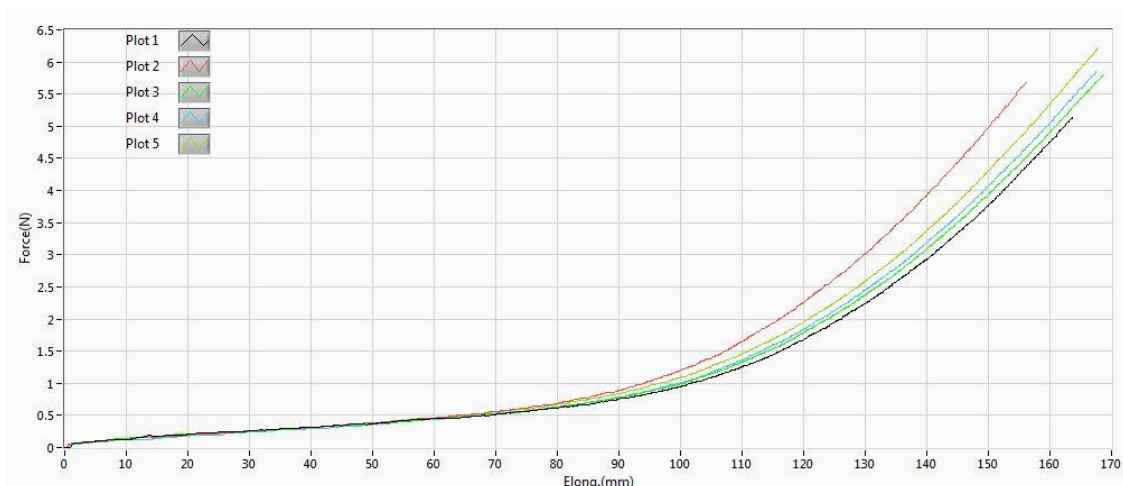


Sample Report:

Eco Instrument

Material Testing Report

Customer Name	ECO	Test Date	8/10/2020 2:24:13 PM
Material	Glove	Test Type	EN 455-2
Test Speed	500 mm/min	Lot No	050820



No.	Specimen	Area (mm ²)	Peak load (N)	Tensile Strength (MPa)	Elongation (%)
1	Latex Glove	0.25	5.13	20.52	654.855
2	Latex Glove	0.25	5.68	22.73	624.549
3	Latex Glove	0.25	5.80	23.21	674.585
4	Latex Glove	0.25	5.85	23.41	669.814
5	Latex Glove	0.25	6.21	24.86	671.361
Maximum	0.00	0.25	6.21	24.86	674.59
Minimum	0.00	0.25	5.13	20.52	624.55
Mean	0.00	0.25	5.73	22.95	659.03