



## QUICK START GUIDE

Titan<sup>4</sup>  
Universal Strength Tester  
Model 110

TestWise™  
Test Analysis Software

Covering Serial Numbers  
110/12/1001 and upwards

James H. Heal & Co. Ltd.  
Halifax, England



Publication 290-110-2\$B  
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Setting the Standard

Published by:

JAMES H. HEAL & CO. LTD.  
RICHMOND WORKS  
HALIFAX  
WEST YORKSHIRE  
HX3 6EP  
ENGLAND

TELEPHONE +44 (0) 1422 366355  
FACSIMILE +44 (0) 1422 352440

E-mail [info@james-heal.co.uk](mailto:info@james-heal.co.uk)  
Internet <http://www.james-heal.co.uk>

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## Un-packing Titan<sup>4</sup>

Titan<sup>4</sup> is delivered on a wooden pallet with surrounding cardboard packaging. Inside the cardboard box, Titan<sup>4</sup> is attached to a Yellow Transport Frame which enables the instrument to be transported in the horizontal position (laying on its back).



**Read all of these instructions before beginning to un-pack the instrument.**

Before un-packing, transport the box to the room where the instrument is to be located.

Remove the outer top cover to reveal the Accessories Tray.



Remove any additional internal packaging.

Then carefully remove the outer cardboard packaging to reveal the Yellow Transport Frame.



Before moving the instrument, remove the bolts (tools provided) which secure the Yellow Transport Frame to the wood pallet.

With the instrument still lying on its back, lift into the upright position. The 'curved heel' on the bottom lifting frame is designed to ease this lifting procedure.



Once raised into the upright position, the bottom Yellow Transport Frame can be removed from the base by unbolting the front cross member (unscrew the bolts on the left and right as indicated by the red circle).



Then unbolt the remaining left and right sides of the bottom frame from the base of the instrument.



The top Yellow Transport Frame can now be removed from the instrument.

## Connecting to Services

**Titan<sup>4</sup>** requires a supply of electricity, compressed air and connection to a PC via a USB cable. The PC must be running Windows XP SP3 or above. Other operating systems or Windows running in a virtual machine are not supported.



On the right hand side of the **Titan<sup>4</sup>** instrument, connect the:

1. USB cable
2. compressed air supply (max 8 bar)
3. foot switch (push and lock)



On the right hand side of the **Titan<sup>4</sup>** instrument, prepare to connect the electricity supply:

1. Check your supply voltage matches that indicated by the white arrow pointing to the white block.
2. Connect the electricity supply.
3. Switch on.

## Changing the Load Cell and Fitting Pneumatic Jaws



This is the empty Carriage.

It shows:

1. Compressed air connection for pneumatic jaws
2. Load Cell connection
3. Red Dot for Load Cell alignment



Place the Load Cell Cartridge inside the Carriage and align the two red dots.

Ensure the Load Cell cable is not trapped inside the Carriage.

Connect the Load Cell cable.



Secure the Load Cell to the Carriage using the Load Cell Nut.



Screw the top jaw to the Load Cell.  
T17 Pneumatic Jaws are shown here.

If the jaws are pneumatic, connect the compressed air pipe (black pipe) between Titan and the Jaw.





Screw the bottom jaw to the base of **Titan**.

Jaw Faces are held only by magnets and no tools are required when changing.

## Installing TestWise Test Analysis Software

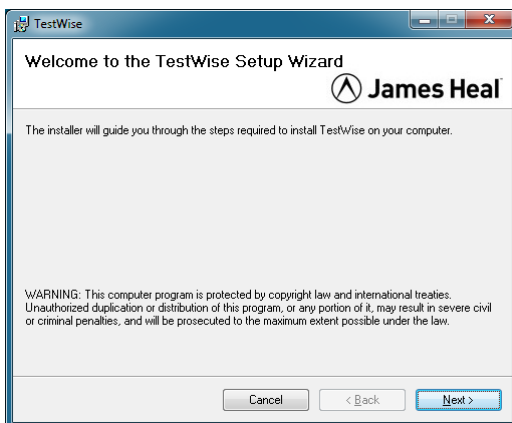
**TestWise** is the name of the software used to control and view results from the **Titan** instrument. It is installed from one CD. The Titan instrument cannot be used without TestWise.

The PC must be running Windows XP SP3, Windows Vista or Windows 7. Other operating systems or Windows running in a virtual machine are not supported. **TestWise** is optimised for Windows 7.

Before installing **TestWise** ensure your dotNET Framework is up to date using the Windows Update service.

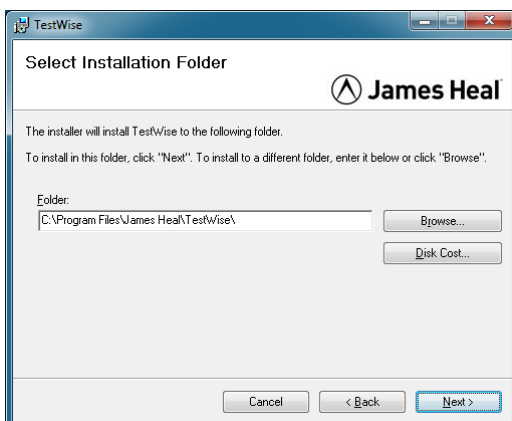


Insert the TestWise CD into the CD or DVD drive on your PC.



The setup will auto-run and you will first be prompted with this dialogue box.

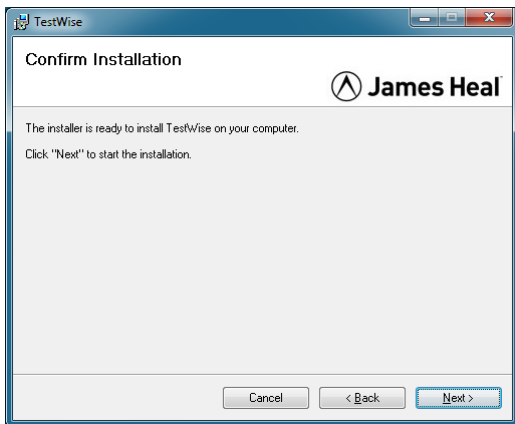
Click **N**ext to continue.



We recommend installing **TestWise** to the default location.

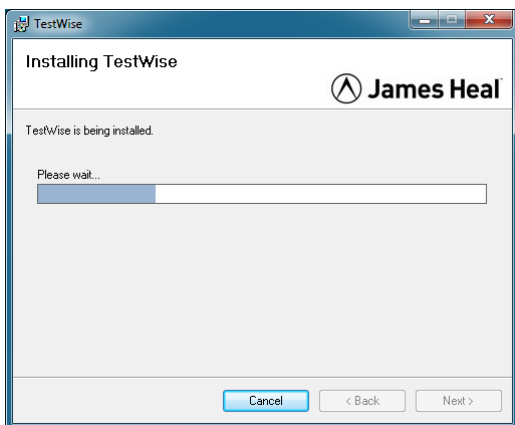
This is the default location in Windows 7. Windows XP or Windows Vista may show different default locations.

Click **N**ext to continue.

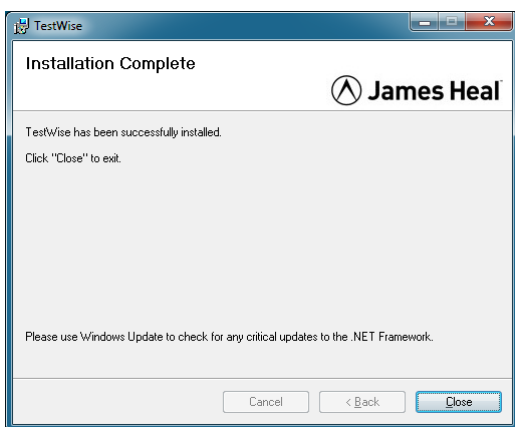


The setup procedure is now ready to install TestWise on you PC.

Click Next to continue.



TestWise is being installed, please wait.



TestWise has been successfully installed.

Click Close.

Before attempting to run **TestWise**, please use the Windows Update service to check for any critical updates to the dotNET Framework.

You will now see an icon on your Windows Desktop which looks like this.



## Configuring TestWise

Before using **Titan** and **TestWise** together you must configure **TestWise** with Load Cell and Jaws Schemes data. This is a simple process which takes only a few minutes and is required only once.



Ensure the electrical power is connected and switched on and that the USB cable is connected to the PC and the Titan instrument.

Double-click the **TestWise** icon on your Windows Desktop to start TestWise.



While the **TestWise** application loads, the following splash screen displayed.

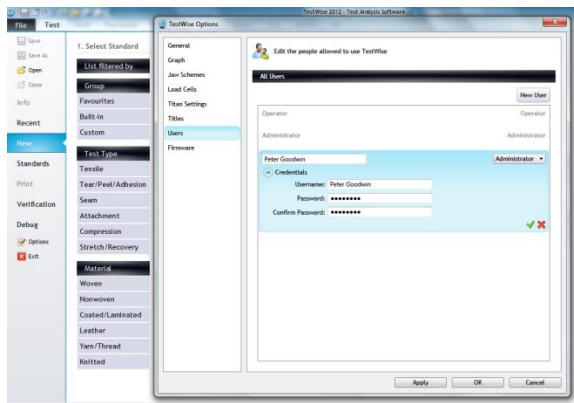


This is the first run screen. Once this procedure is completed you will not see this again.

Click the **Start Upload** button to begin the upload of configuration data from **Titan**.



Click the **Continue** button to begin using **TestWise**.



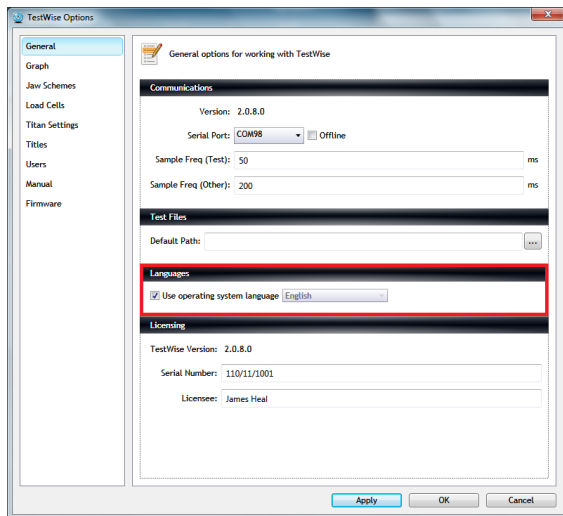
**TestWise** creates a new user called “Admin” using a password of “password”.

We recommend you add at least one user with Administrator level and one user with Operator level.

To manage users, go to File > Options > Users.

Click the green tick when finished editing a user, and Apply and OK when finished all user editing.

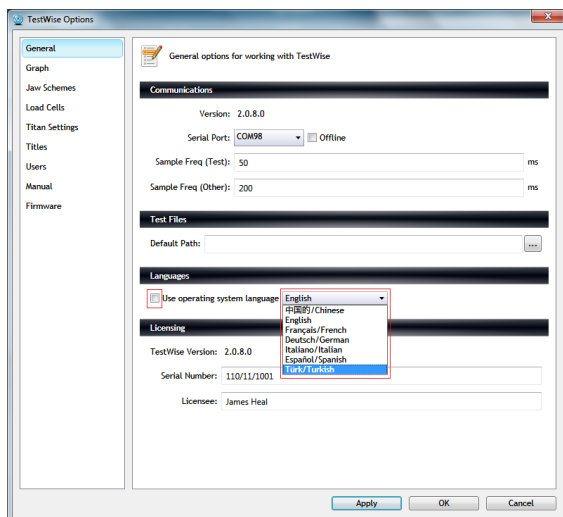
## Changing the TestWise Language



The language used by TestWise is the Windows Operating System language, which at the time of writing, can be selected from English, Turkish, Chinese, Italian, Spanish or French.

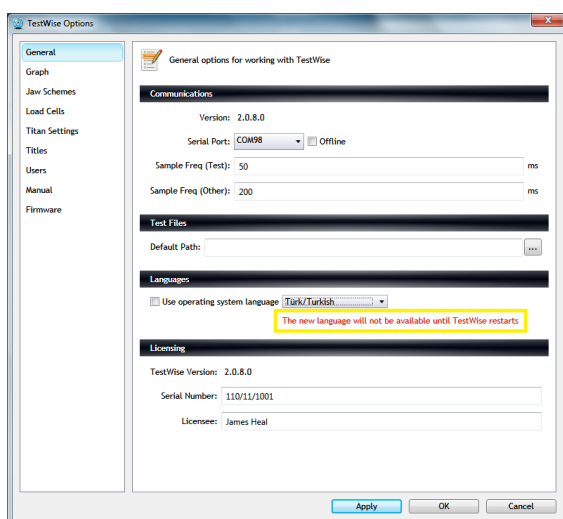
If the operating system language is not in this list, TestWise will default to the English language.

Changing the language in TestWise will not affect your Windows settings or language settings in any other applications.



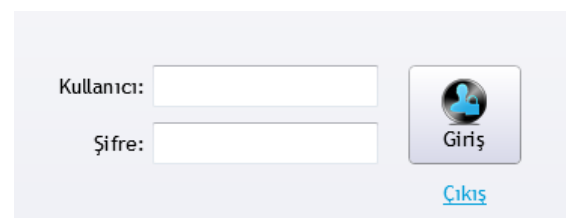
It is possible to manually override the automatic language selection.

From the File > Options > General menu, UNcheck the “Use operating system language” box and select the required language from the list.



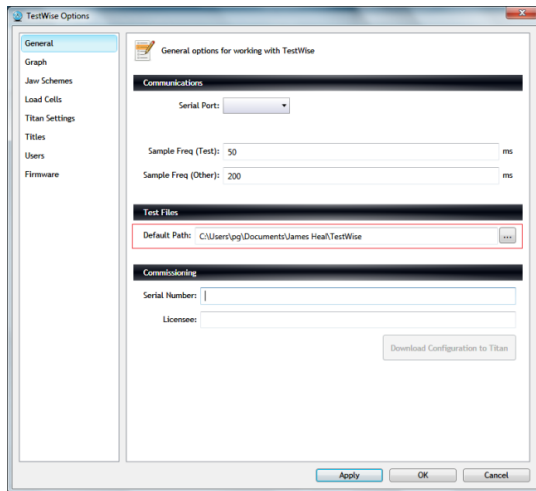
To complete the manually override of the language, TestWise must be restarted.

Click OK and Exit TestWise.  
Restart TestWise and Login.



## Before You Begin Testing !

Before you begin testing there are some Options which you should check are to your liking.  
File > Options

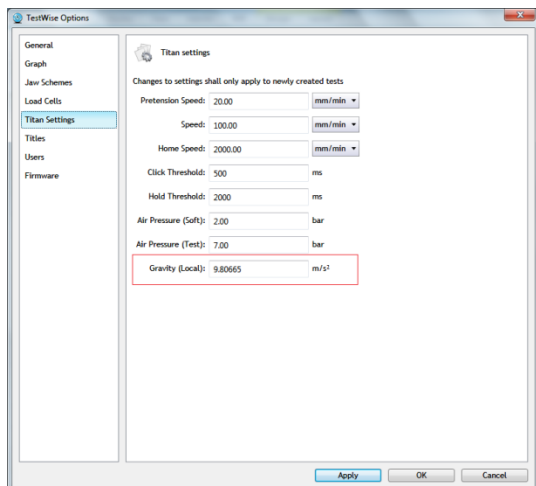


### > General

Set the preferred path to save test files.

Browse using the ... button.

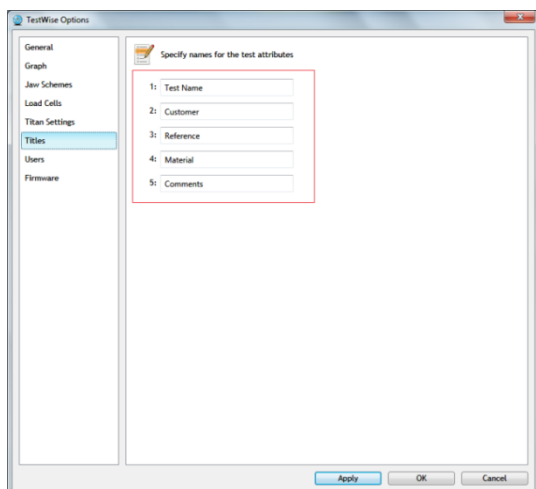
Click Apply when finished.



### > Titan Settings

If you know your Local Gravity value, enter it here, followed by Apply.

If you don't know your Local Gravity Value, do not change this value.



### > Titles

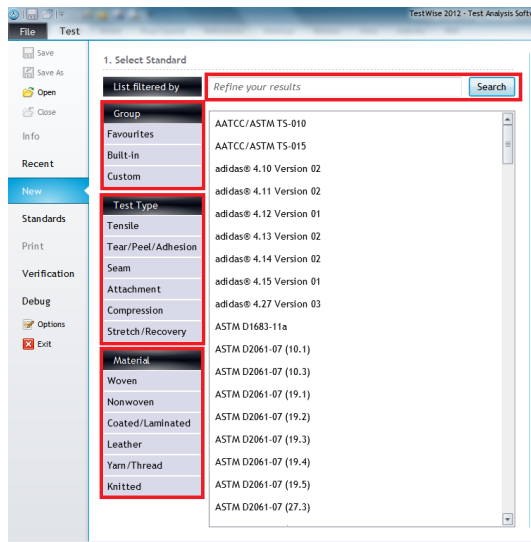
These are perhaps the most important settings as they are used in the Test Report.

The Titles are used to describe the sample. For example, you may want to change Test Name to Batch Number or Job Number.

Try to decide these Titles before you begin testing.

When finished click Apply followed by OK.

## Using Search Filters to Find a Standard

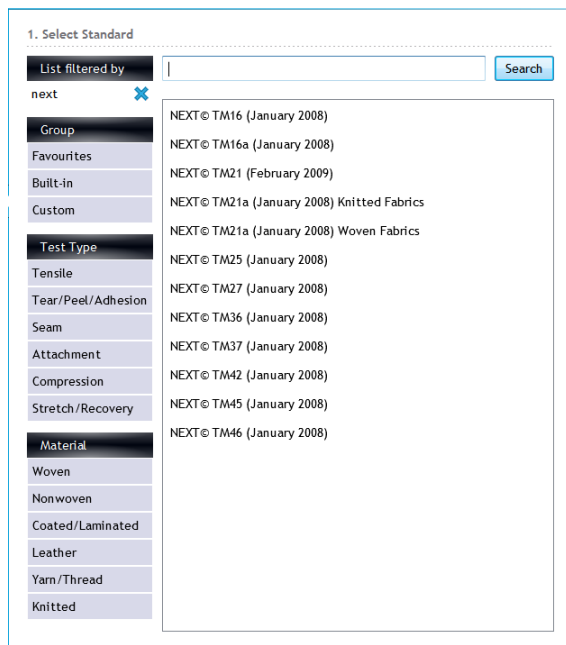


TestWise uses a variety of search filters which enable you to quickly find the standard you need.

You can simply search or use any of the special filters.

Special filters reduce the standards list by Group (see Favourites later), by Test Type or by Material.

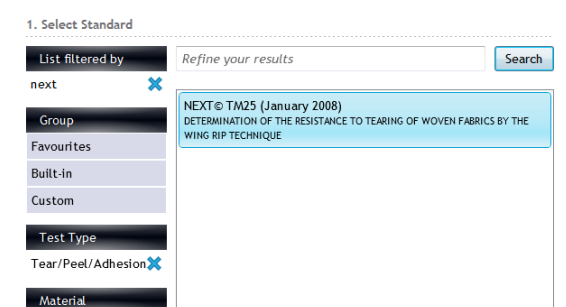
The filters can be used in combination.



### Search Box

For example, to find all the standards associated with the UK retailer Next plc, type **next** followed by pressing the enter key or clicking Search.

To clear a search filter click the blue cross.

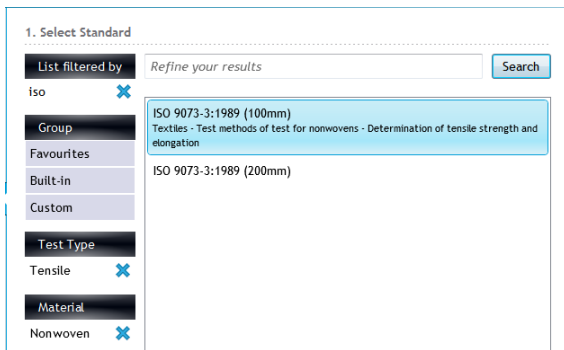


By also selecting other filters you can narrow your search.

For example, clicking Tear/Peel/Adhesion yields just one standard.

When you point to a standard it is highlighted and the standard title is also displayed.

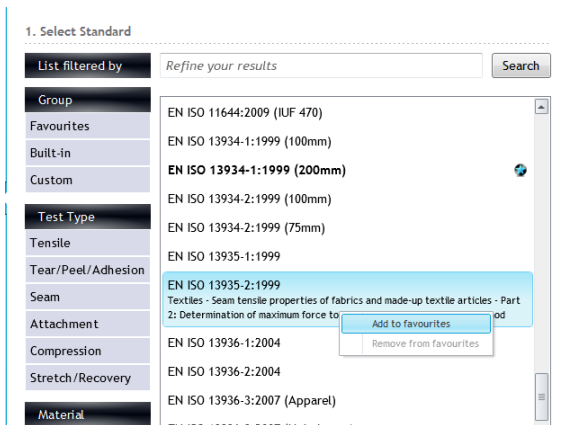




Another example. Imagine you want to find an ISO standard for the tensile strength of nonwoven fabrics:

Type “iso” in the search box and press enter.  
Click Tensile  
Click Nonwoven

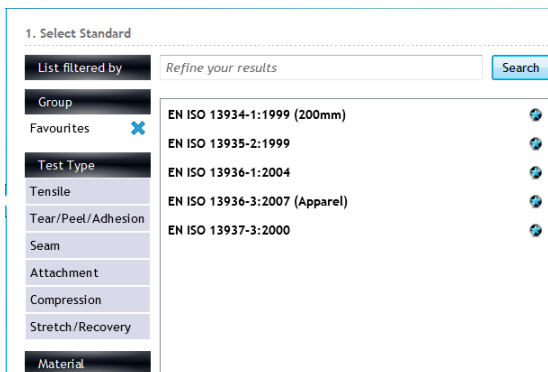
## Favourites - Your Favourite Standards in One-Click



You can group a selection of standards into a selection known as Favourites. Each user can create their own individual Favourites.

To add a standard to your Favourites list, simply right-click on the standard and then select Add to Favourites.

Favourites are always shown in bold and with a star.

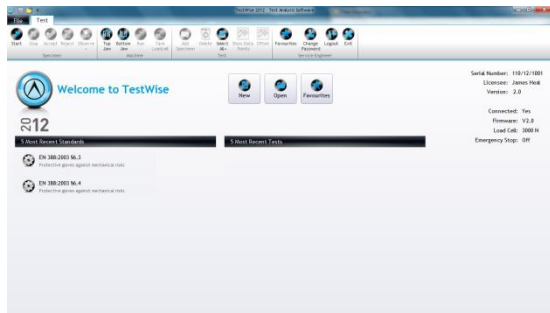


To show only your Favourites, click the Favourites group filter.

You can add or remove Favourites at any time.

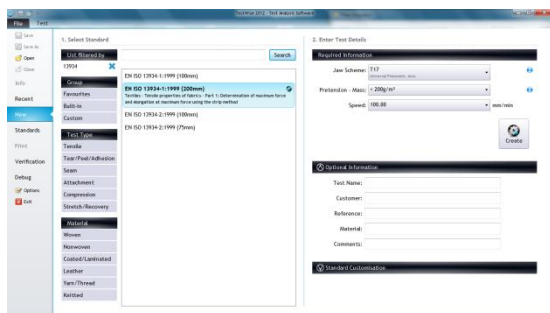
## Example Test Using TestWise

The following section will guide you quickly through the simple steps of carrying out a tensile test.



Login to TestWise.

Click the New button.



Use the search filters to locate the Standard you require.

For this example we will select EN ISO 13934-1 with a 200mm Jaw Separation.

### 2. Enter Test Details

Required Information

Jaw Scheme: T17  
Universal Pneumatic Jaws

Pretension - Mass: < 200g/m<sup>2</sup>

Speed: 100.00 mm/min

Create

Select a suitable Jaw Scheme, in this case T17.

It is important that the selected Jaw Scheme matches the Jaws actually fitted to Titan. If they do not match then the Jaw Separation will be incorrect.

### 2. Enter Test Details

Required Information

Jaw Scheme: T17  
Universal Pneumatic Jaws

Pretension - Mass: < 200g/m<sup>2</sup>

Speed: No Pretension (pretension off)  
< 200g/m<sup>2</sup>  
≤ 200g/m<sup>2</sup> & < 500g/m<sup>2</sup>  
≥ 500g/m<sup>2</sup> mm/min

Create

If required, select the required Pretension force, determined by the weight of the fabric.

## 2. Enter Test Details

**Required Information**

Jaw Scheme: T17  
Universal Pneumatic Jaws

Pretension - Mass: < 200g/m<sup>2</sup>

Speed: 100.00 mm/min  
20.00  
100.00

Create

**Optional Information**

Test Name: Job 12.053

Customer: ABC Textiles plc

Reference: PO987654321

Material: CP6302

Comments: After Washing (5 x 5A)

Select the Speed required.

In this case, the common default speed is 100 mm/min. However, some tests require a slower speed of 20 mm/min.

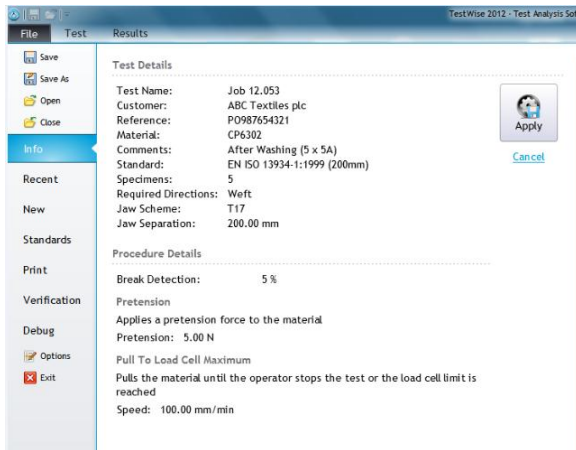
Enter details which describe the sample. This information will be stored with the test results and printed on the Test Report.

These fields can be left blank and populated at any time via File > Info > Edit. See below.

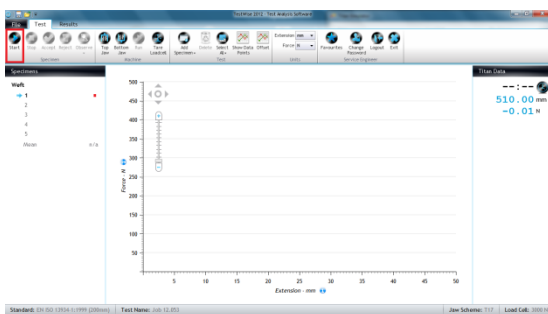
This information can be edited at any time.

However, once a specimen has been tested and Accepted, the "Required Information" cannot be changed.

After making any changes, click Apply. To exit without saving changes, click Cancel.

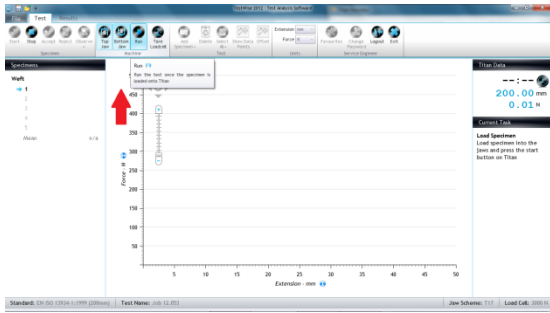


To commence the test, click Create.



Click the Start button on screen or press F9 on the keyboard.

If Titan has been switched off, then you will be prompted to set the Reference Position. Click OK and the Carriage will move to the Home Position (the top of the column) and then return to the required Jaw Separation.



Place the specimen centrally in the top jaw.  
Close the top jaw by any of these methods:

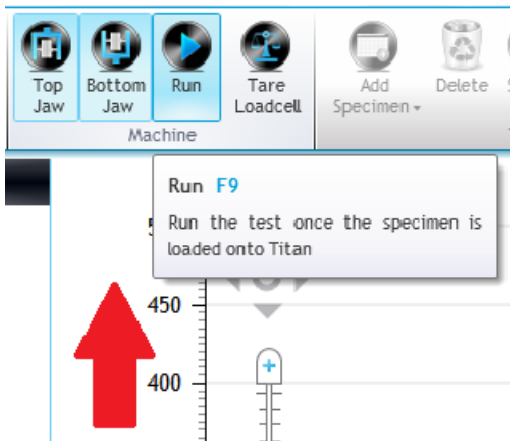
- Clicking Top Jaw on screen
- Pressing F2 on the keyboard
- Pressing the Titan Start Button once
- Pressing the Foot Pedal (if connected)

Place the specimen centrally in the bottom jaw and without tensioning the specimen, close the bottom jaw by any of these methods:

- Clicking Bottom Jaw on screen
- Pressing F3 on the keyboard
- Pressing the Titan Start Button once
- Pressing the Foot Pedal (if connected)

If while loading the specimen into the jaws you make a mistake (for example, the specimen is not central) you can open the jaw by clicking the appropriate button on screen, pressing F2 or F3 on the keyboard.

Alternatively, if you press and hold the Titan Start Button or the Foot Pedal for 2 seconds or more then the last jaw action will be undone.



Click Run or press F9 on the keyboard to start the test.

Note that the function of the Function Keys changes dependent upon the task being undertaken.

**Current Task**  
**Load Specimen**  
 Moving to jaw separation  
 position: 200.00 mm

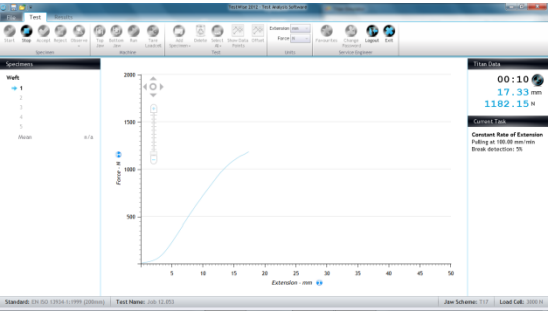
**Current Task**  
**Load Specimen**  
 Waiting for air pressure

**Current Task**  
**Load Specimen**  
 Tare Loadcell

**Current Task**  
**Pretension**  
 Applying force of 5.00 N

On the right hand side of the **TestWise** screen you will see a notifications of the **Current Task**.

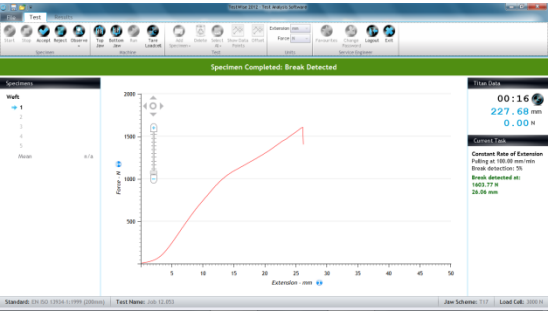
Throughout the test this can change many times and these are some of the more common examples.



This is the first specimen in progress.

If the plot goes off scale on either axis then the graph will rescale in real time.

You can also see an area called **Titan Data**. This is displaying elapsed time, extension and force. The units are dictated by the Standard.



In this example of a tensile strength test we are using the **Break Detection** feature.

This means the specimen break is detected automatically. When this occurs the test will end and if pneumatic jaws are being used, they will open.

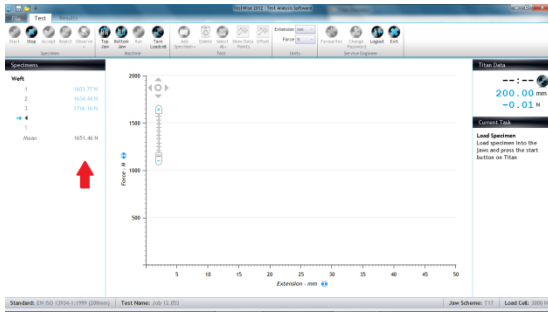
The **Current Task** now shows the **Force and Extension** (green text).



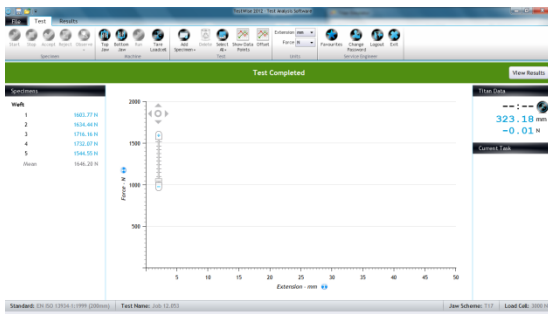
The user now decides to **Accept or Reject** the test.

**Accept** saves the data and then moves on ready for the next specimen.

**Reject** irreversibly deletes the test data for that specimen.



As you proceed through the test specimens you will see the test results accumulating on the left hand side of the **TestWise** screen. For convenience the mean (average) result is also shown.



When all specimens have been completed, the green banner advises you “Test Completed”.

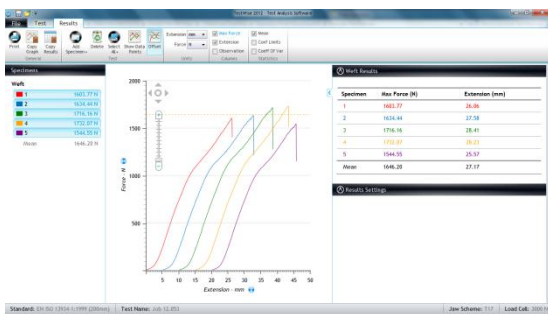
To see the Results, click the View Results button in the green banner.

You can also click the Results tab.

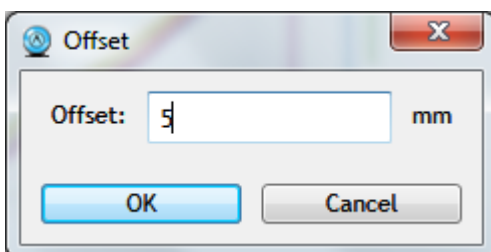


Each specimen is assigned a colour as shown here. For example, the red graph corresponds to the red results.

Up to ten (10) colours can be defined. If you have more than ten (10) specimens, the colours start again from the beginning.

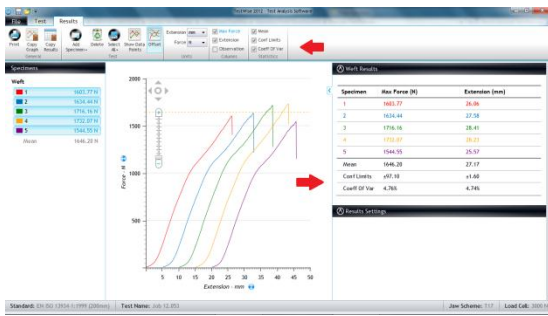


Here are the same results with the graphs offset. This is useful when comparing the shape of the plot.



Click Offset on the Ribbon and this dialog is shown. Type in a suitable value.

To cancel the Offset, click Offset again.



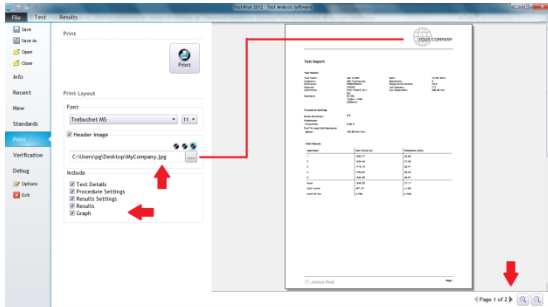
To display any additional Statistics, check the boxes in the Ribbon. As soon as the box is checked (or unchecked) the statistics will update.



You can also change the Force and/or Extension units if required. Any changes are applied immediately.

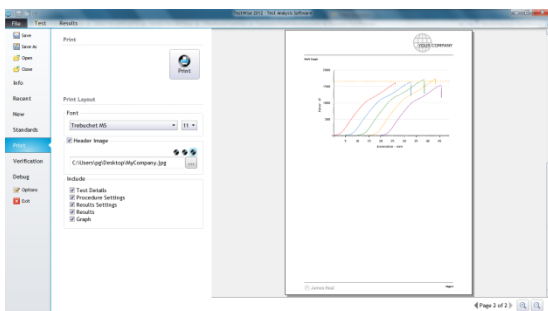


To view the Test Report, click Print. This will take you to the Print Preview.

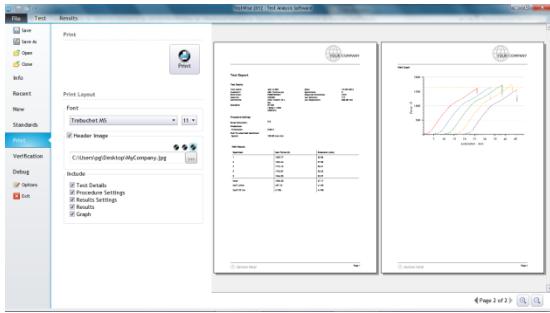


You can change:

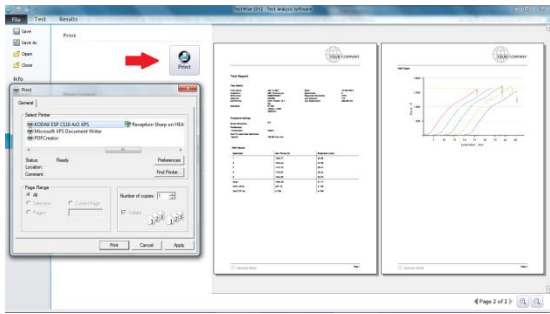
- the default font and size
- add a logo
- choose the details in the Test Report
- change the view
- print a hard copy



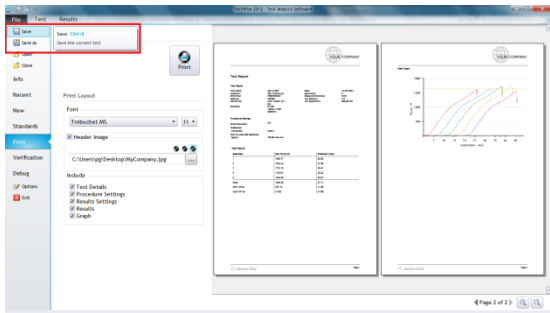
Another view.



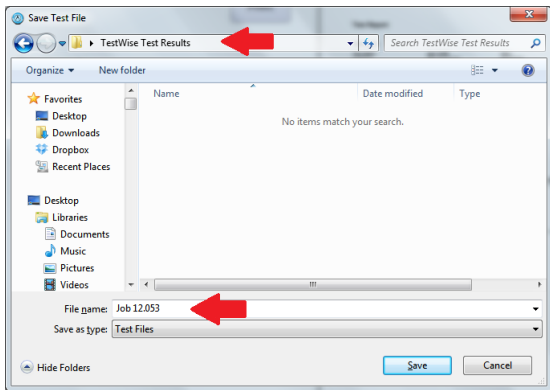
Another view.



Clicking Print will now bring up the Windows Print dialog.



To Save the test data, select Save or Save As from the File menu.



The Save dialog is displayed.

If a Default Path is defined (see Before You Begin Testing !) then this folder will be opened.

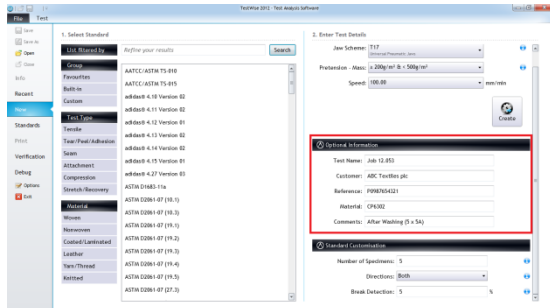
If required, edit the File Name, and then click Save.

Congratulations - you have now completed your first test using Titan<sup>4</sup> and TestWise.

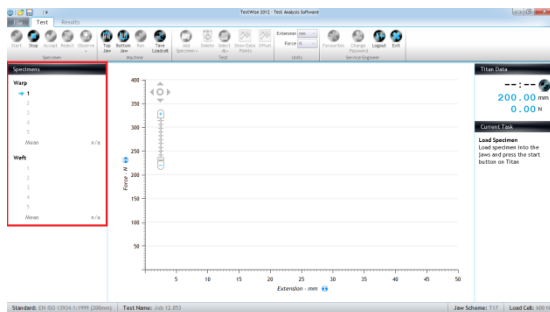


## Making Changes During the Test

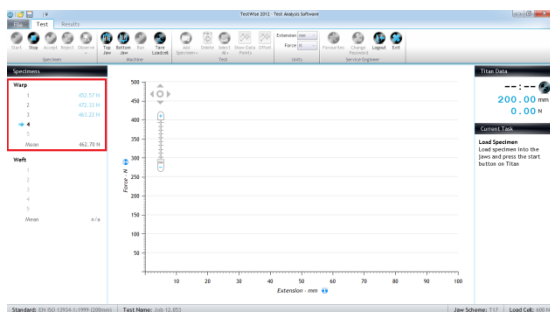
During a test it is sometimes necessary to change some of the details. This could be changing the number of specimens to be tested, deleting a specimen, adding a specimen, changing the break detection setting or changing the sample description or references (titles). This section shows how these changes can be made.



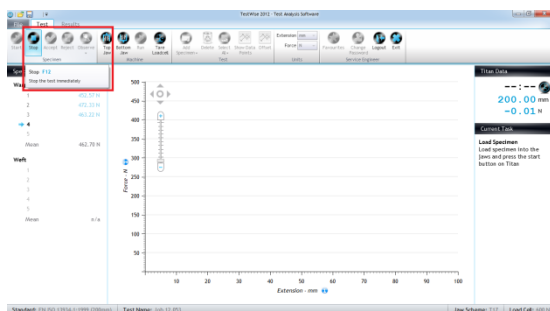
The Optional Information (or titles) can be added either at the start of the test or any time after.



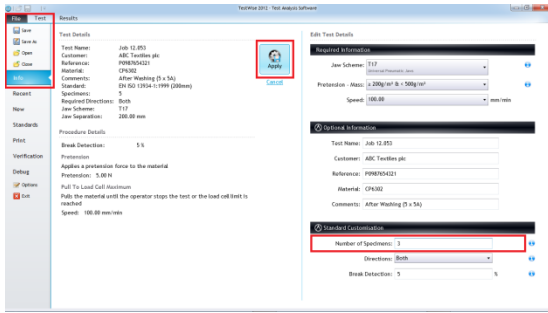
By default, the selected Standard requires 5 specimens to be tested in each direction.



What if you need to change the number of specimens to 3.



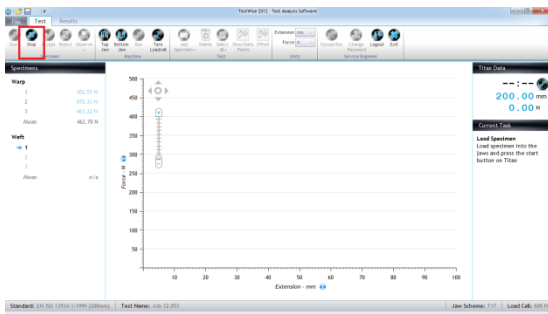
Click the Stop button.



Click on File > Info.  
The test details will be displayed.

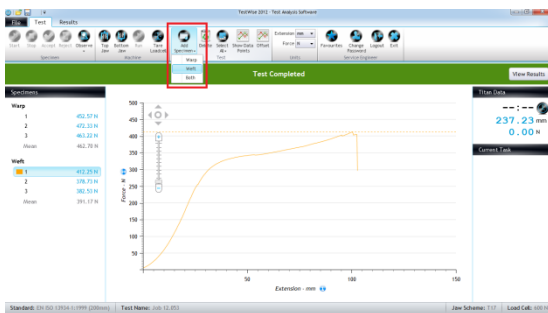
Change the number of specimens to 3.  
You can also edit other details on this screen.

When finished, click Apply.



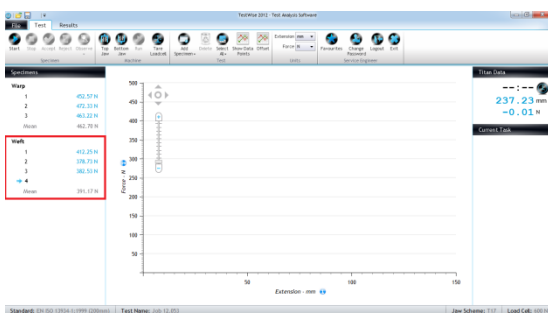
To begin testing again, click Start.

Notice the number of specimens in each direction has changed to 3.

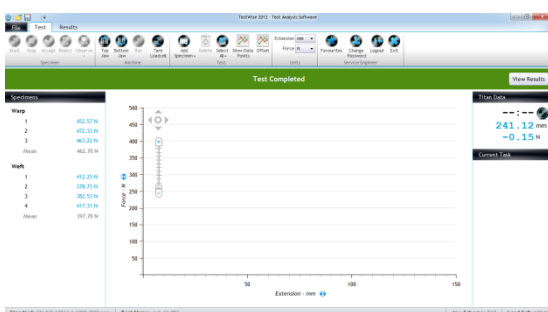


To add a specimen, click the Add Specimen button. You can add specimens to just one direction or both directions.

In this case, we are showing specimens being added to the left direction.

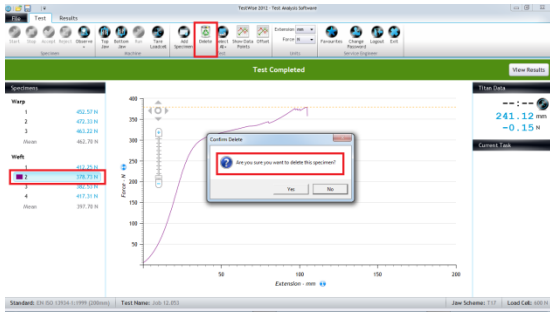


An additional specimen has been added to the left direction.



Test the additional specimen.  
The warp direction now has 3 specimens tested and the left direction has 4 specimens tested.

The number of specimens tested in each direction does not have to be equal.

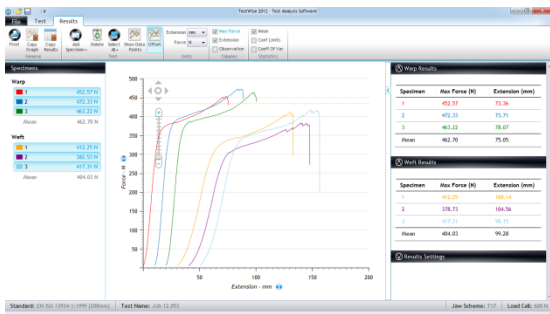


To delete a specimen, first select the specimen or specimens and then click the Delete button.

You will be prompted with a message asking for confirmation. The default response is No, do not delete. To delete, click Yes.

Note: once the specimen is deleted it cannot be restored.

The final results.

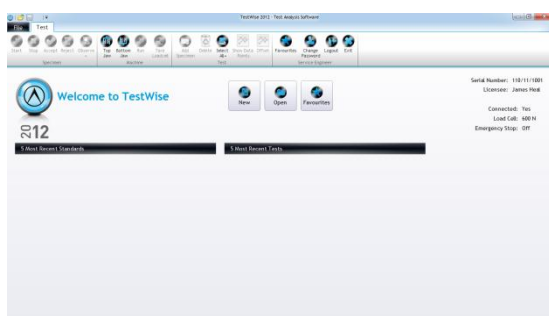


## Creating Custom Standards

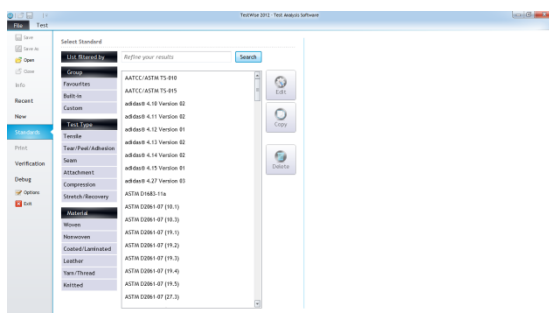
You can create a Custom standard (or “user-defined standard”) by copying an Built In standard. Built In Standards are those which are supplied by James Heal and installed with **TestWise**. You can Copy Built In Standards but you cannot edit them. Once a Custom Standard is created, you can edit or copy it.

Creating a Custom Standard is useful for creating both simple and complex standards. The system relies on editing a pre-existing Standard, therefore, Standards cannot be created from a blank template. This means you must choose a Standard which most resembles what you want to do and then use this as your template. In cases where this is not possible, please contact James Heal for help and advice.

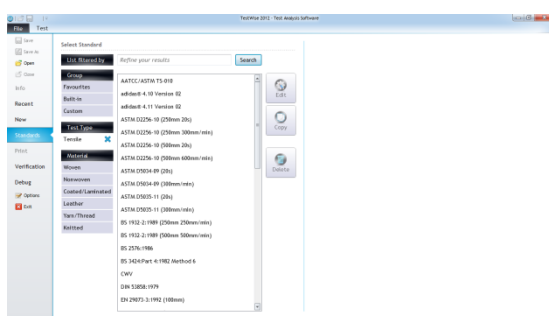
In the following example we are going to create a new tensile test.



Start **TestWise** and login with Administrator privileges.

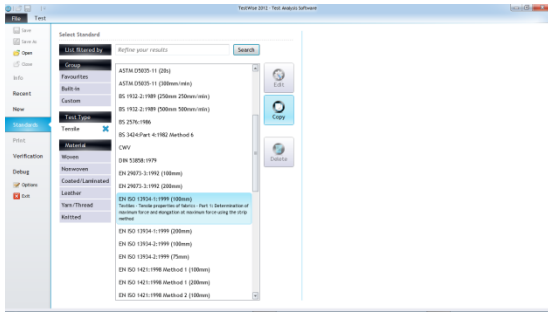


From the File menu, select Standards.

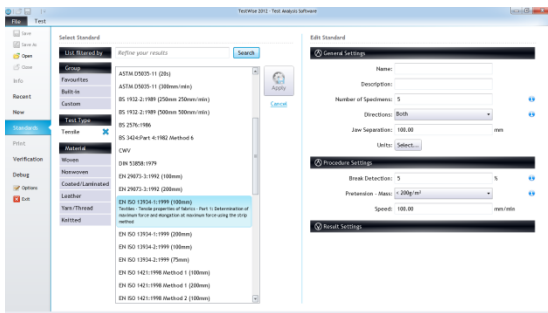


Find the Standard to use as a template.

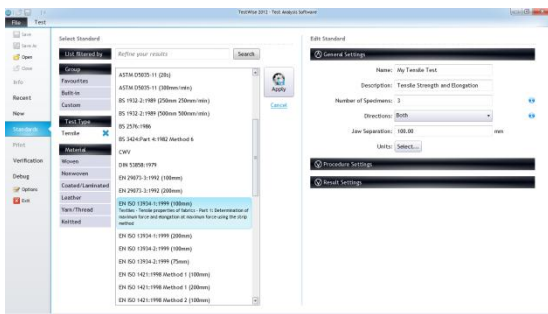
Apply the Tensile filter by selecting Tensile in Test Types.



Select the Standard from the list and click Copy.



The parameter settings for the selected Standard are displayed.

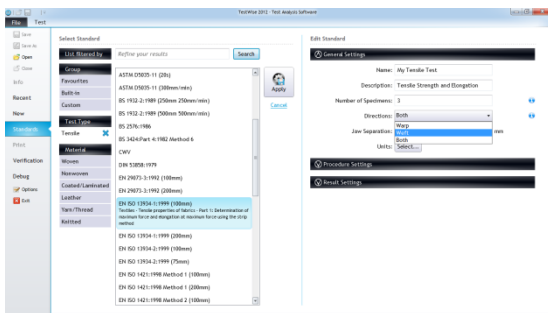


Type in a Name and Description for the new Standard. We have also reduced the number of specimens from 5 to 3.

Name:

Description:

Number of Specimens:

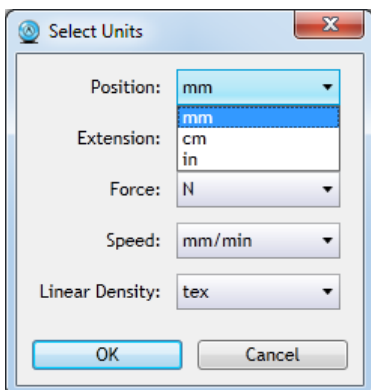


For My Tensile Test, I only want to test specimens in the weft direction.

Directions:

Jaw Separation:  mm

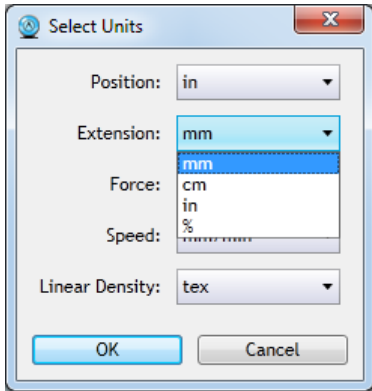
Units:



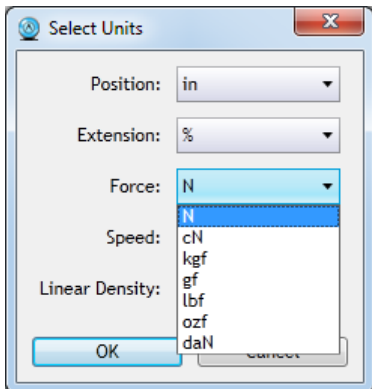
Standards use a variety of units and these can be configured using:

Units:

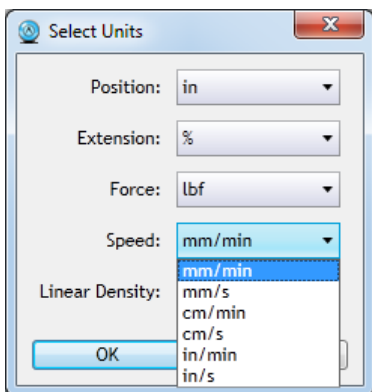
We will keep millimetres for the position.



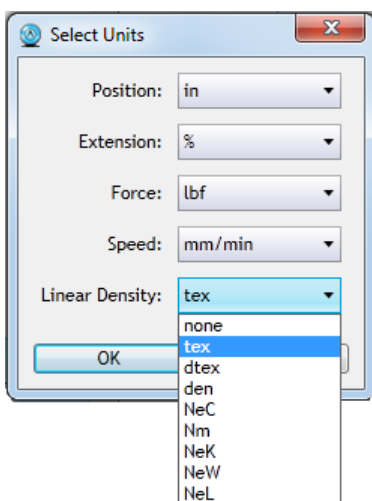
For Extension select %.



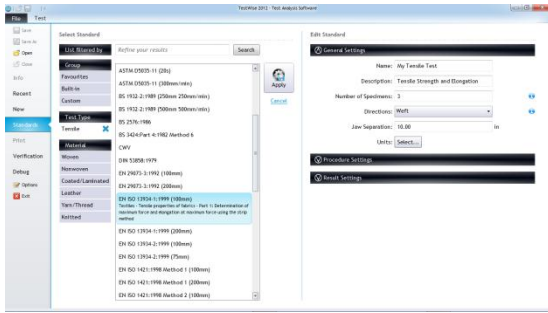
For Force, select lbf (pounds force).



For Speed, keep mm/min.

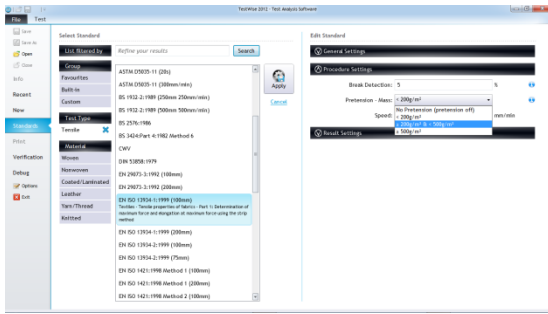


Linear Density is only used in Yarn Tensile tests. If a linear density is specified the results are expressed as tenacity. If no linear density is specified, the results are expressed directly as force.



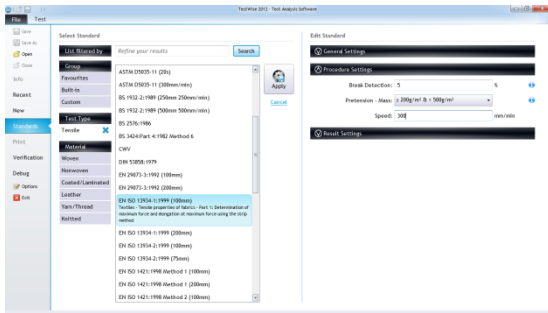
Enter a Jaw Separation (also known as Gauge Length or Gage Length). In this example we are setting a value of 10 inches.

Jaw Separation:  in  
 Units:



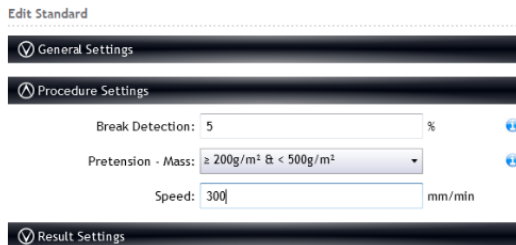
Select a Pretension value if required. Pretension is important when Elongation is being calculated. In this example, we are going to change the default to 200-500 gm<sup>-2</sup> range.

Pretension - Mass:   
 Speed:  mm/min

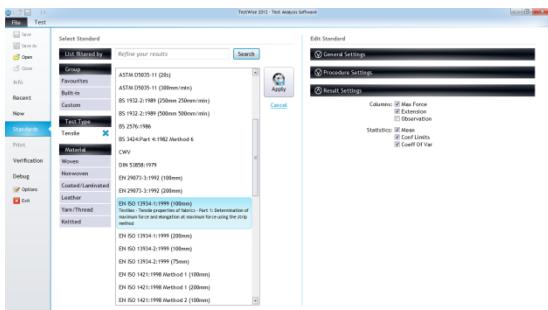


Change the Speed, to 300 mm/min in this example.

Break Detection:  %  
 Pretension - Mass:   
 Speed:  mm/min

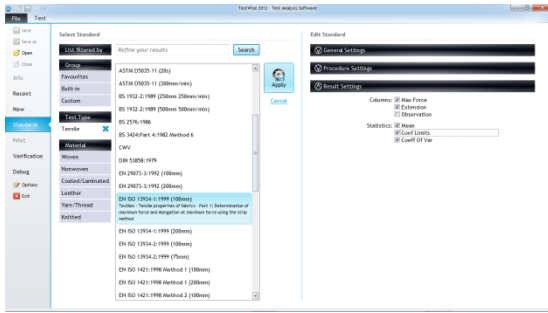


To collapse or expand a Settings group, just click on the bar.

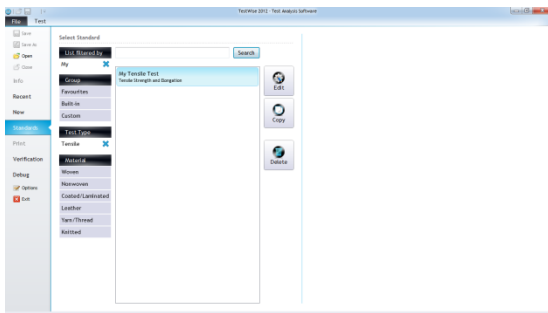
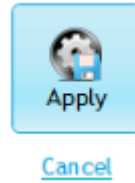


Check or uncheck any of the boxes as required.

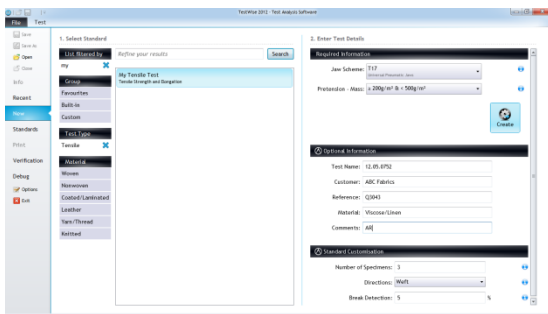
- Columns:  Max Force  
 Extension  
 Observation
- Statistics:  Mean  
 Conf Limits  
 Coeff Of Var



Click Apply to save the new Standard.

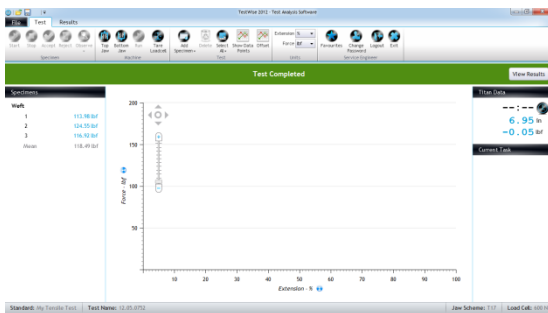


Search for the new Standard and select it. You can see that it is possible to edit or copy this Standard because it is User-Defined.



Create a test using the new Standard.

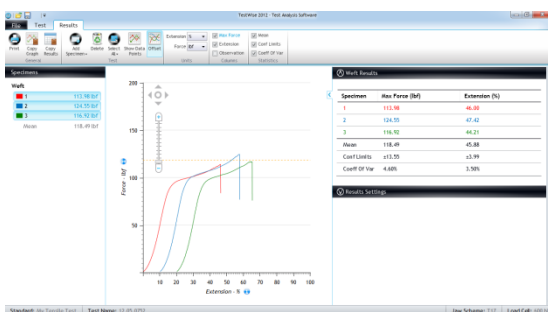
As normal, go to File > New and search for the Standard.



When the Test is Completed, click on the



shortcut to automatically select all the specimens and view the results.



Results of the new Standard “My Tensile Test”.

Graphs shown with offset for clarity.