

Bluehill[®] 2 Software

Simplicity and Power for Material Testing Applications

Load	Strain 1	Strain 2
1090 mm	.0000 N	10.44 mm/mm
		0.000 mm/mm

Simple Accurate Intuitive Flexible

Fast Powerful

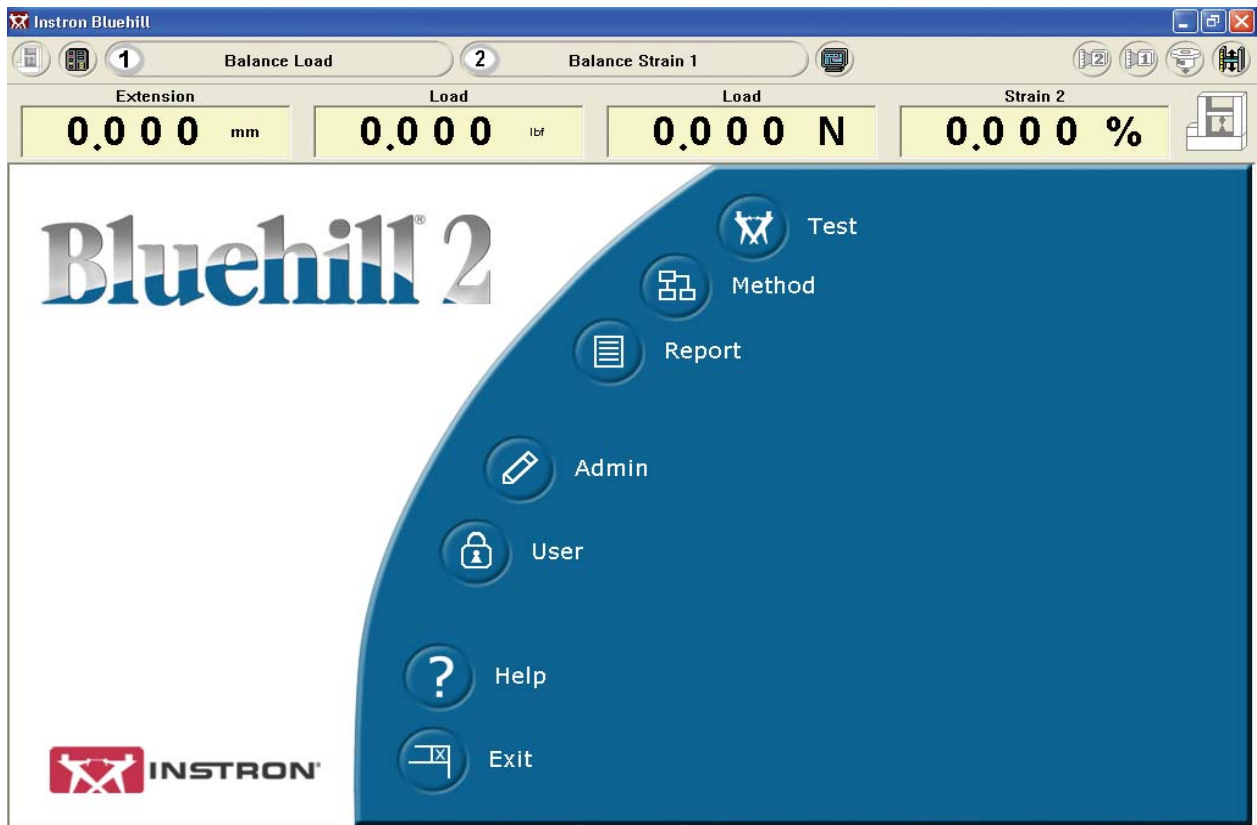
Bluehill[®] 2



INSTRON

*The difference
is measurable[®]*

Simplicity and Power



▲
Bluehill*2 home page

Unmatched Functionality and Intuitive Operation

Bluehill 2 continues the tradition set by the original Bluehill software released in 2004. This newest generation is a fully-integrated modular software package that provides easy, tailored application solutions for today's laboratory managers and test technicians.

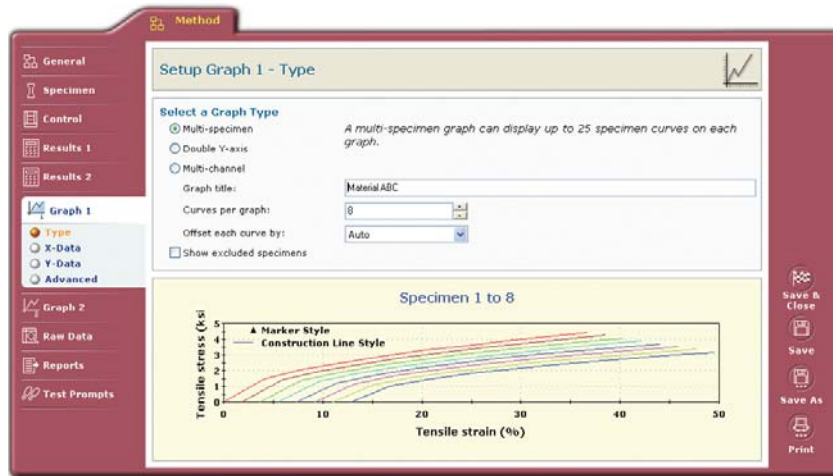
Bluehill 2 provides the most powerful and flexible material testing package available along with an intuitive web-like design that users at all levels will find easy-to-use and learn. From the simplicity of a basic peak load test to the power required for a complex cyclic test, users will appreciate the minimum learning and training required.

Bluehill 2 software is divided into color-coded tabs making what you are doing obvious. Screens are tailored to the unique application requirements of each test type. Parameters such as fixture set-up, test terminology, unit choices and calculations are configured automatically, allowing your laboratory to achieve maximum productivity easily and quickly. Bluehill 2's capabilities and design reflect Instron's strong application background, developed almost 60 years ago as a world leader in material testing. Bluehill 2 is directly compatible with a wide variety of Instron systems including the 3300, 4200, 4300, 4400, 5500, 5800 and 8800 series systems.

Have it Your Way

Bluehill[®]2 continues with a simple-to-use, tabbed user interface. It consolidates testing, test method definition, test reports and system administration, making the entire testing process very easy-to-manage. Click a tab to see your choices, then select what you want to do. It's that simple.

Choose both the manner in which you want the test to run and the content that you want to see. You control everything from the graphic style to the format of the columns in the results table to the layout on the screen. Additionally, you define the type of testing output; from the report format to the results file type and location. It's your test, your way.

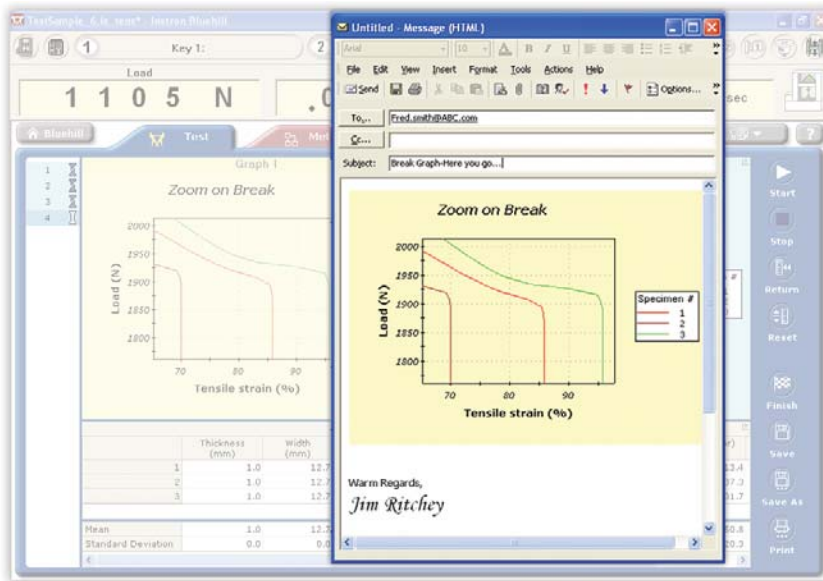


▲ Bluehill 2 runtime screen graphics set-up

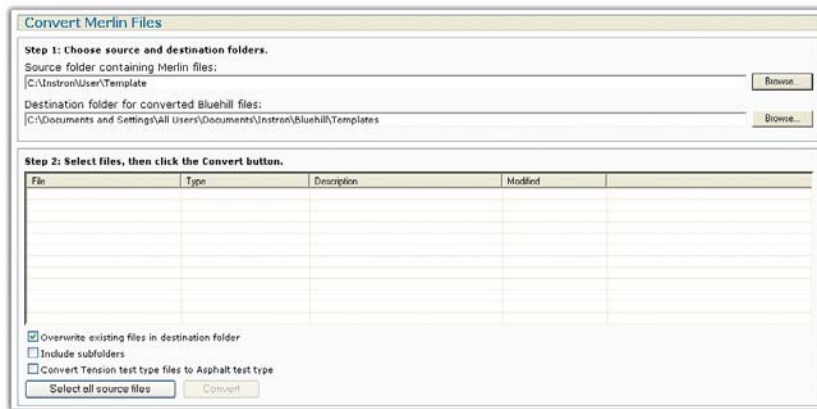


▲ Bluehill 2 running a test

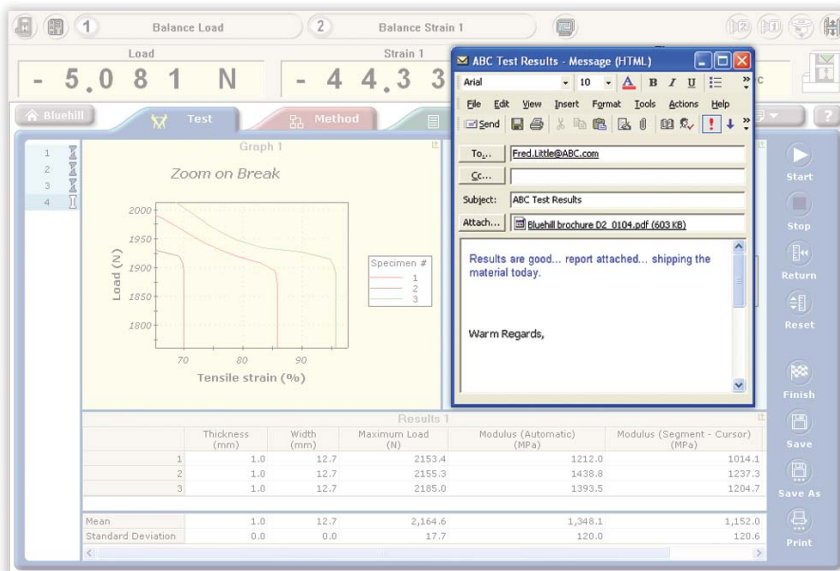
The Simplicity



▲ Cut and paste graphs directly into e-mails



▲ Merlin and Series IX conversion utilities are standard features



▲ E-mail your report from Microsoft Outlook or other programs

Copy and Paste Capability

Use the standard copy and paste technique to copy result tables and graphs from Bluehill[®] 2 and paste them into your favorite software packages like Microsoft[®] Word, Excel or Powerpoint. You can even export results directly to database packages like Microsoft Access.

Easy Conversion

Bluehill 2 features a web-like design so that anyone familiar with the Internet will feel at home. Additionally, we looked to our legion of users to tell us their favorite elements from our existing Series IX[™] and Merlin[™] software packages. We have brought those favored features along into Bluehill 2, maximizing familiarity and minimizing training often associated with new software packages. Bluehill 2 also comes with a conversion utility that automatically converts most existing Merlin and Series IX test methods and data files. You can start testing immediately after installing the software.

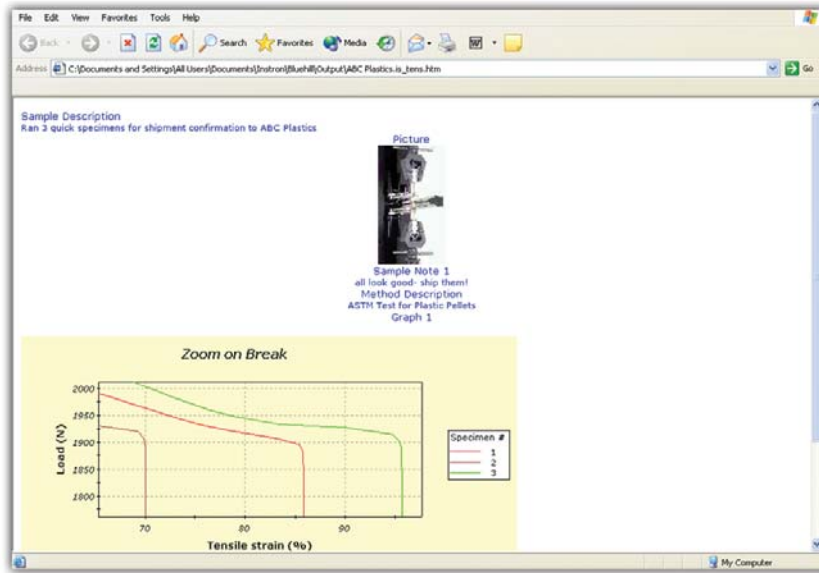
E-mail your Report

With a single step, you can automatically email the test report when testing is complete. No copy and paste or other task is required - just click on 'Finish' and Bluehill 2 does the rest. You can send the reports as an MS Word, or Adobe[®] PDF file.

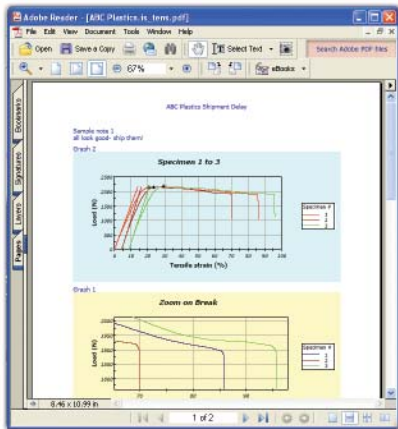
Report Templates using Microsoft® Office and Web Standards

Bluehill®2 incorporates several standard report templates to accommodate a wide range of reporting needs. Output options provide additional versatility. For example, you can save your report as a Microsoft Word file for later editing, as a PDF file for easy and secure emailing or as an HTML file for simple posting to an internal or external website.

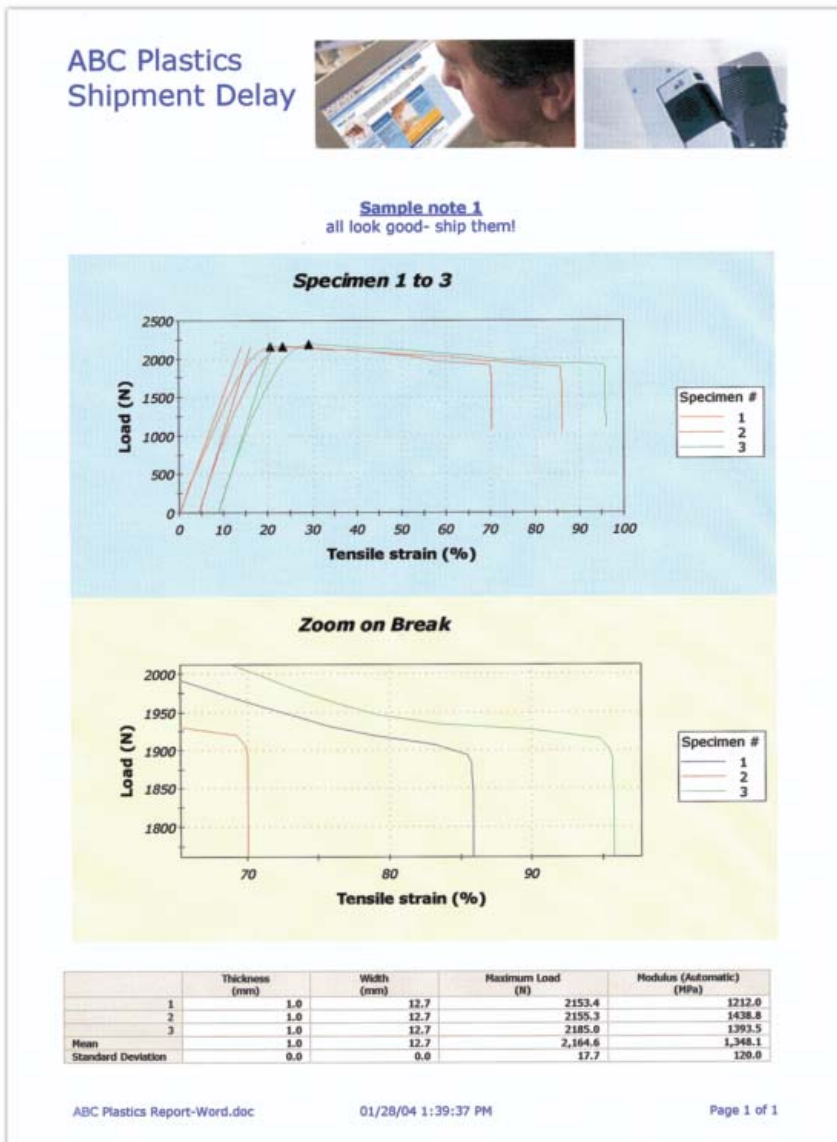
Additionally, results can be saved to traditional ASCII files for easy import into your own statistical software package or database.



▲ HTML file for simple posting to an internal or external website

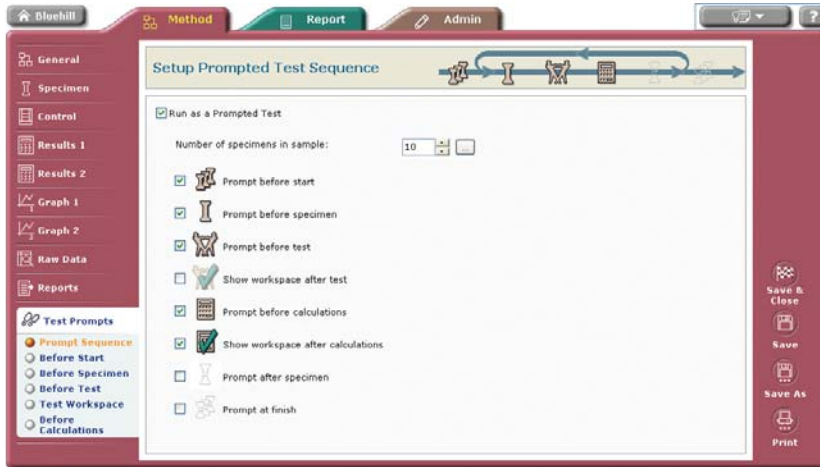


▲ Standard Adobe® PDF report



▲ Standard Microsoft Word report

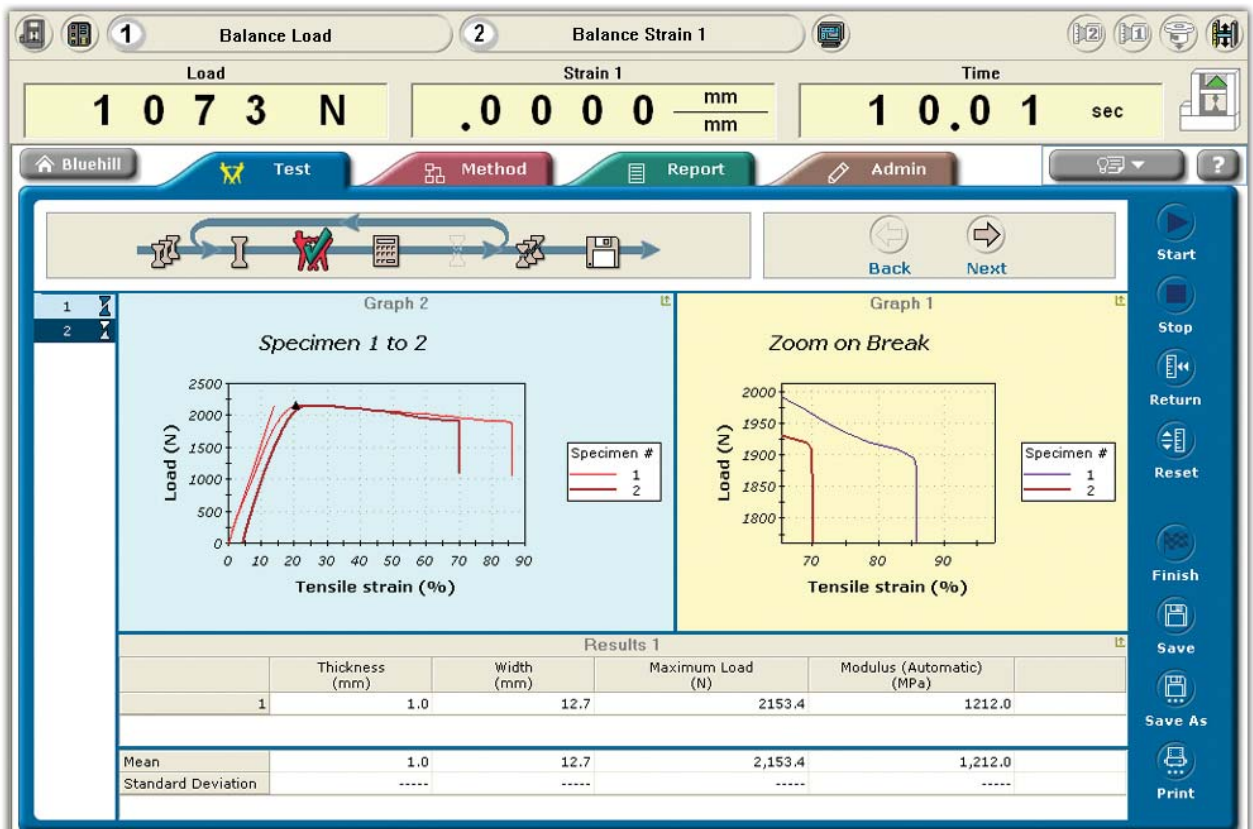
More Simplicity



▲ Setting up the 'Prompted Test'



▲ 'Prompt' before the test specimen in testing mode



▲ Runtime screen for 'Prompted Test'

Prompted Testing for Speed and Efficiency

Bluehill® 2's 'Prompted Test' feature provides the industry's most efficient and productive interface for basic testing. With 'Prompted Test', every aspect of the user's interaction with the Bluehill 2 software can be defined. Prompts for user input can be inserted at any point during the test sequence.

Input and message prompts can appear at six points during the test procedure:

- Before starting test sample/ batch
- Before each specimen test
- Before test
- After test, before calculations
- After specimen
- After sample, at finish

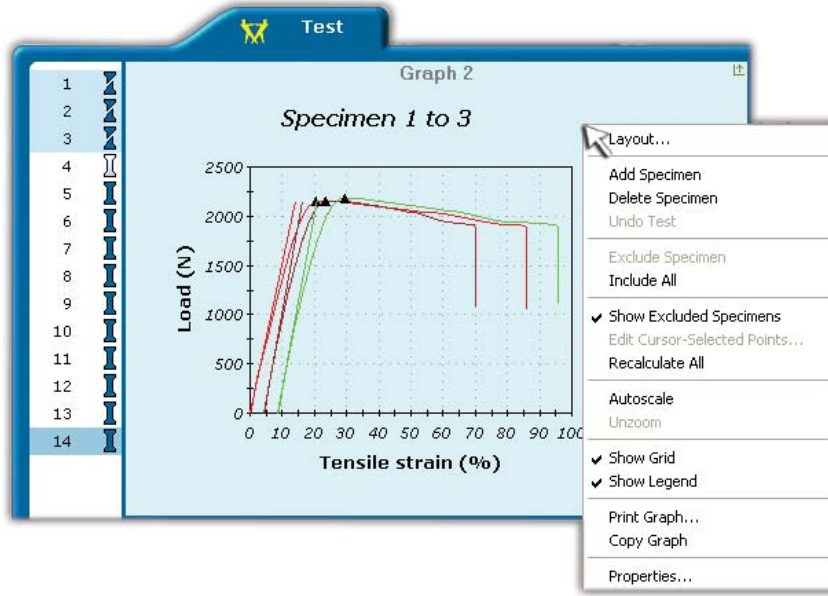
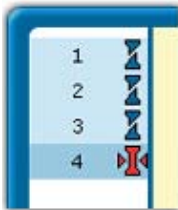
You can also opt to show the runtime workspace after the test or after the calculations are performed.

Context Menu

Throughout Bluehill[®] 2, you can take advantage of context menus (commonly referred to as 'Right Click' menus) to streamline your operation. 'Right Click', copy and paste information or find other details like graph and result tables, table properties are available for changing.

Specimen Selector

The unique Bluehill 2 'Specimen Selector' allows synchronized viewing of results, graphics, inputs and status for any test specimen.



Context menu of the runtime graph

Test Inputs

The test input area allows you the flexibility of entering crucial specimen information at any time before, during, or after your testing. For example, you could input dimensions for your specimens while you are testing another one. This saves valuable time and minimizes input errors.

Test input pane from runtime screen

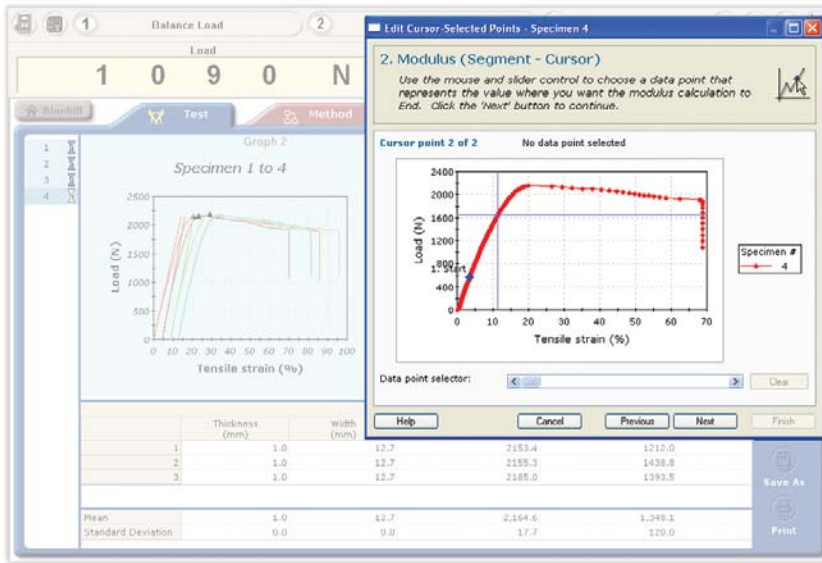
Status Console - Designed For Simplicity and Safety

Sitting conveniently above the operator's workspace is the intuitive Bluehill 2 status console. The console allows the user to see, at all times, what load is being applied to the specimen under test which is an important safety feature. The console is user-configurable, and includes soft keys that permit a variety of features ranging from quick auto calibration of the load cell to the set-up of function keys on the user handset (5800 and 5500 series only).

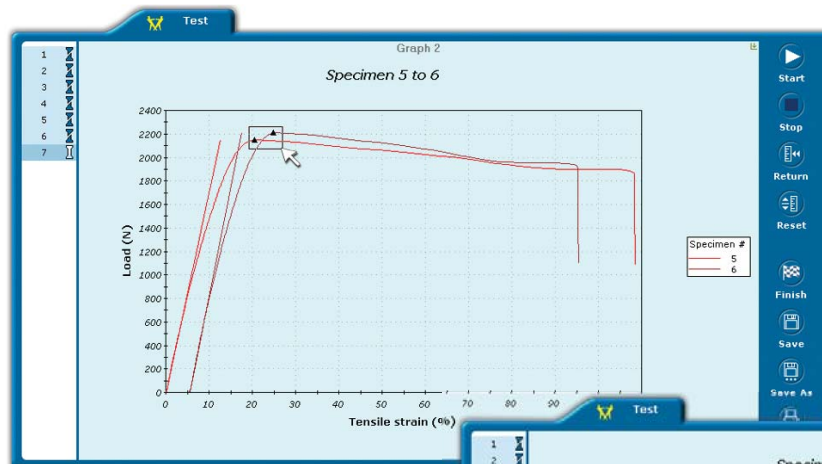


Status console

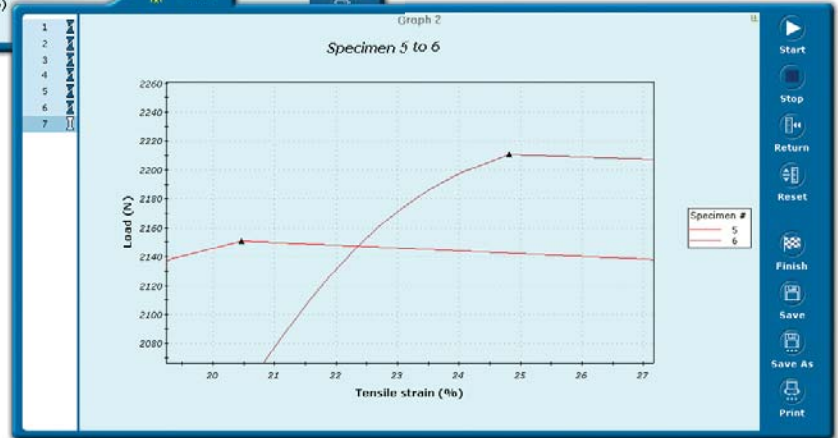
The Power



Using cursor selected points to define modulus region



'Zooming' on the peaks of test 1 and 2



Peaks of test 1 and 2

Free-Form Testing for Maximum Flexibility

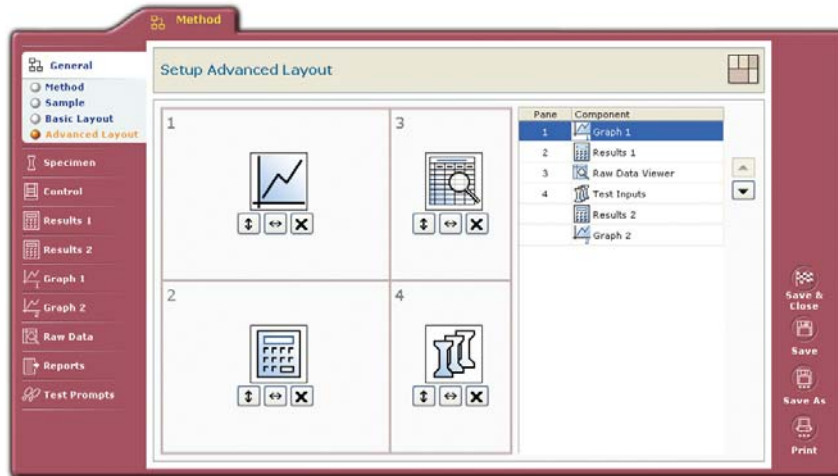
Bluehill® 2 allows the user to create a test flow that is best suited for individual testing needs. The user can input specimen-specific information such as dimensions or specimen ID's at any point in the testing sequence wherever it is most efficient. Similarly, any aspect of the test, its display, or the input of test parameters is user-controlled. For example, you can have Bluehill automatically calculate the modulus or you can select the modulus region yourself with the cursor-select feature.

Test Screen Displays

The user sees a single runtime screen throughout their testing; no flickering back and forth between displays. The graph can be set to automatically rescale throughout the test. Additionally, with a single mouse click, you can 'Zoom' into detailed regions of the graph data.

Test Screen Layout

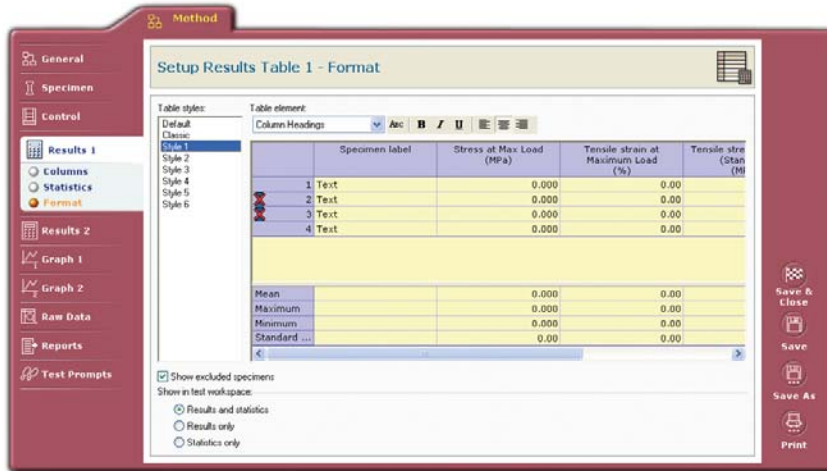
Sometimes an application requires the user to examine different aspects of the testing results and corresponding graphics. With Bluehill[®] 2, you can easily design a layout that best fits the test flow. For example, if you need two real time graphs with a results table underneath, just right click and customize the layout (available through the 'Reports and Graphs' pack). Layout elements include graphs, result tables, test input parameters and a raw data table.



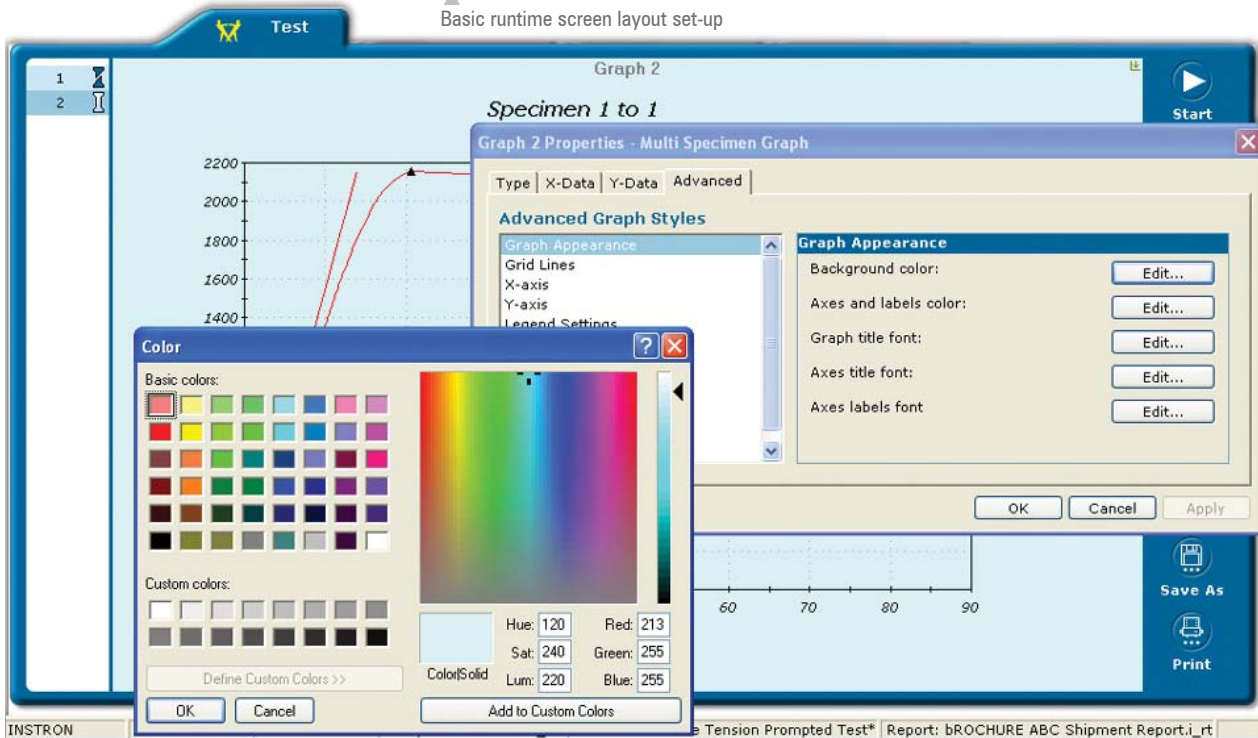
Advanced runtime screen layout set-up

Format

How the runtime screen components are formatted is fully within your control. Everything from results table style to column fonts, to graph background colors to input table options are controlled and designed by you. These formats are saved along with all of the parameters, like test speed, when you save a test method.

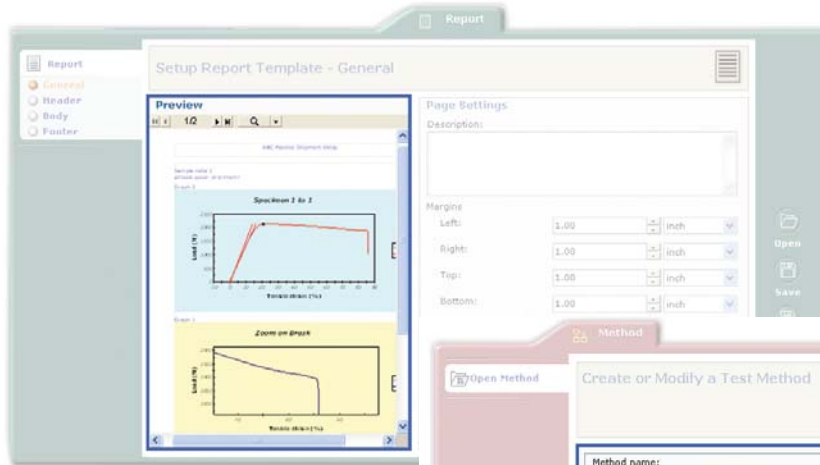


Basic runtime screen layout set-up

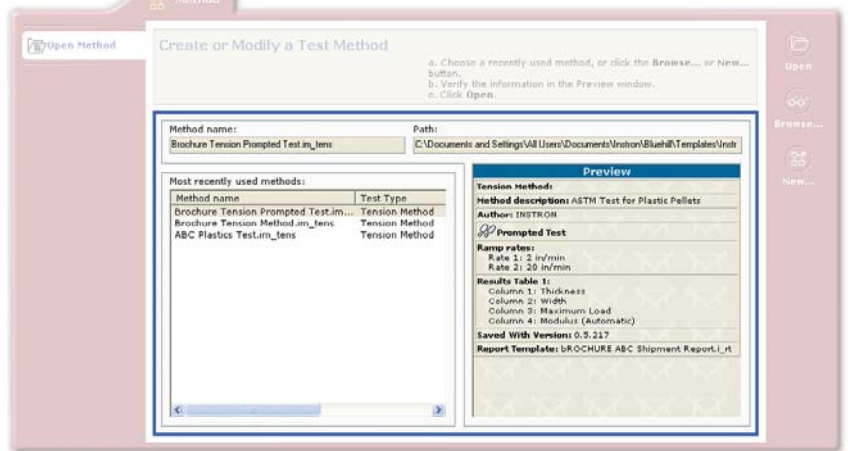


Setting the format of the runtime screen

More Power



Report set-up with the preview showing on the left



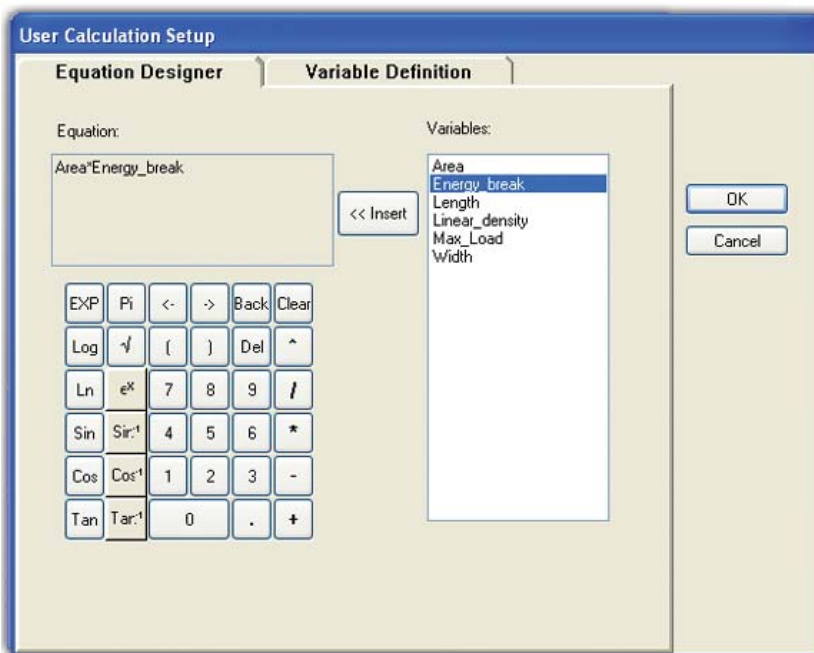
Test method opening with preview showing

Preview

Bluehill® 2 offers the ability to preview all files before selecting them including test methods, sample data, and report templates, or preview reports before printing. The preview saves time by eliminating incorrect selections and printouts thus creating a more efficient laboratory or work place.

User-Defined Calculations

Bluehill 2 includes hundreds of standard application calculations that cover almost every testing need. Unique requirements can be addressed through the 'User Calculations' feature that enables creation of test results by manipulating existing calculations. A range of mathematical, trigonometric, logarithmic and exponential functions are supported, with all expressions presented in simple terms. Simply click on the calculator to create an unlimited number of your own calculations.



User-defined calculation set-up

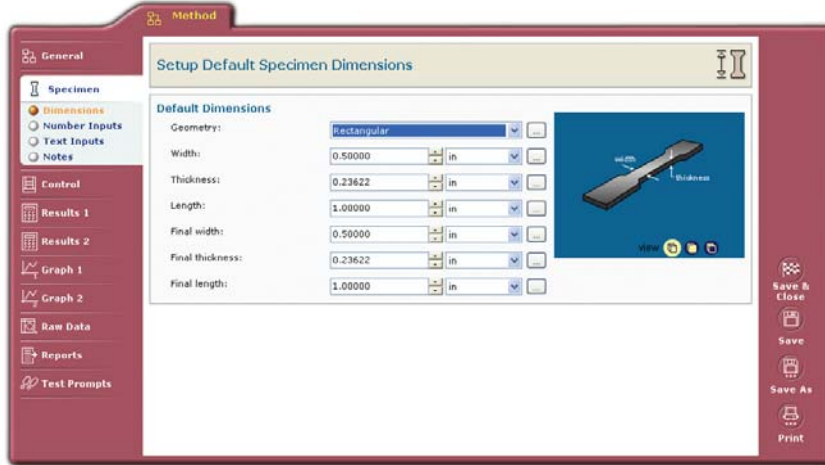
API

The Bluehill 2 API interface allows users to access Bluehill 2 test information or automate Bluehill 2 operations using an external program. The Bluehill 2 API can be used in Visual Basic 6.0, VBA, Visual C++ or any programming language that supports COM. The API was created to function as a virtual user. This means that it is intended to function in the same manner as the UI. Use the API to create custom programs such as linking to corporate LIMS or QC databases, automatic monitoring of test results against control limits, etc. API examples are included.

Tips

Every screen in Bluehill® 2 has an associated set of useful tips in the form of questions and answers. For example, when creating a test method, the tips displayed are specific to each screen, helping you define the test conditions and test sequence.

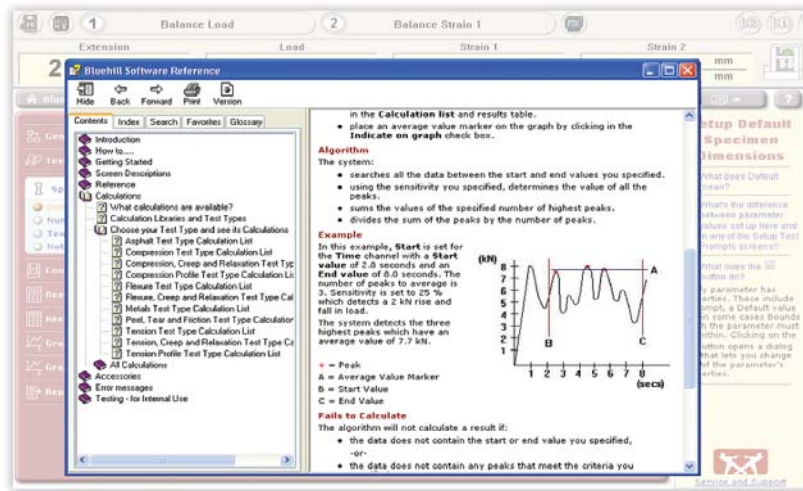
Every button and control in Bluehill 2 has a tooltip; just move the cursor over the item to see what it does.



▲ Tips showing on the right side

Reference Help

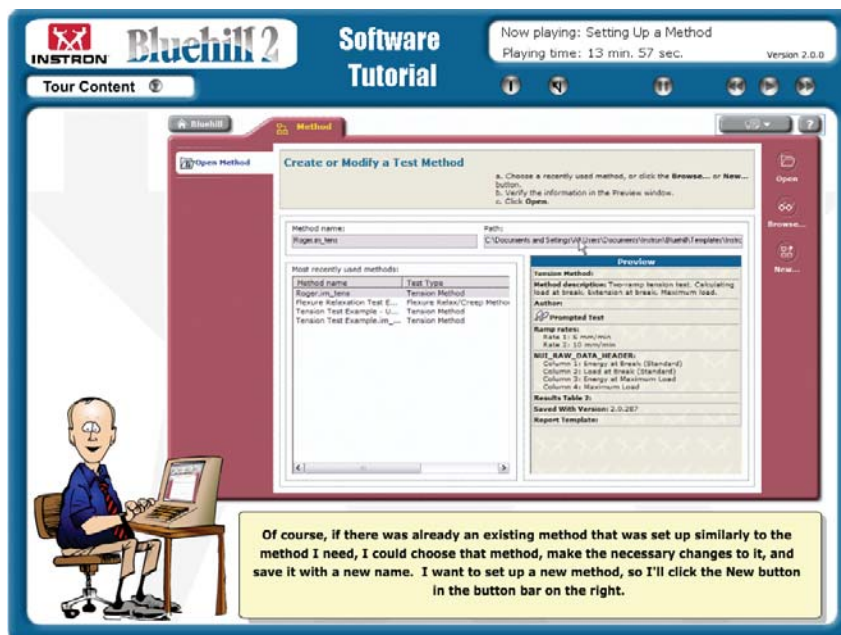
If you need even more detail, click F1 and a context-sensitive link from the 'Tips' pane takes you directly to the relevant topic within the main help and reference system. Once the help system is opened, you can browse for more information using a table of contents, a comprehensive index, a text search facility and a glossary of material testing terms. The help system offers a wealth of information for the operation of your system and a reference library on applications, calculations and other relevant topics.



▲ Reference help for peel testing

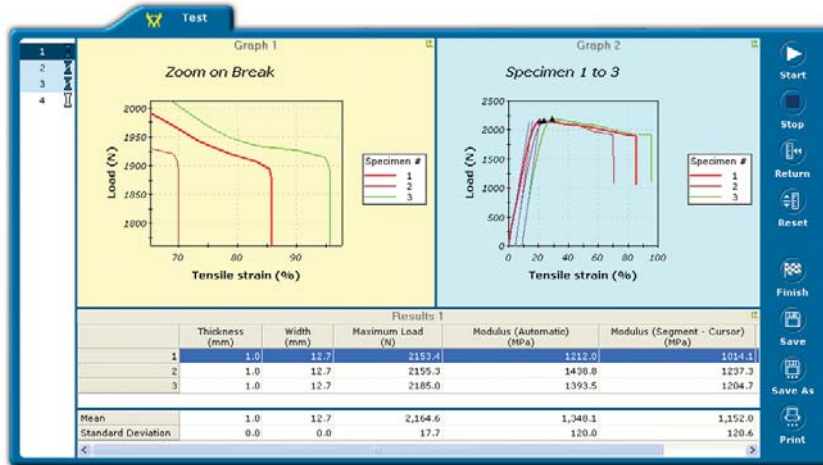
Tutorial CD

Bluehill 2 supplies an interactive tutorial CD describing the Bluehill 2 user interface and how to set up methods, calculations, results and reports. It is an excellent familiarization tool, letting you and your test operators quickly and safely come up to speed with your Bluehill 2 software.

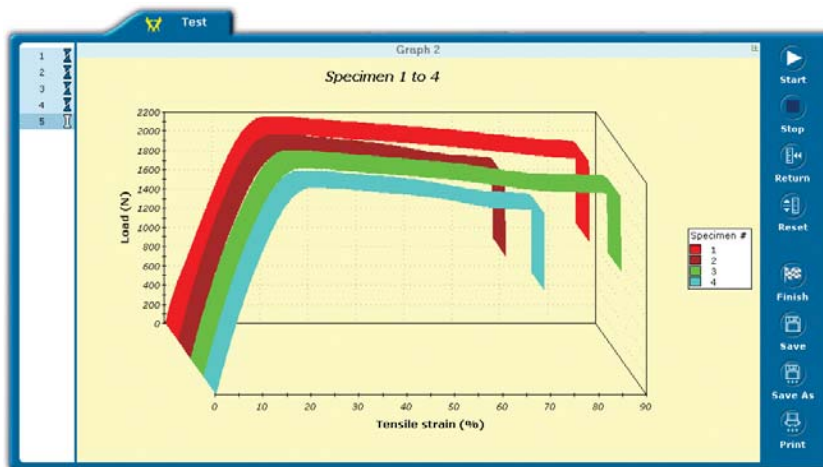


▲ Bluehill training tutorial with every system

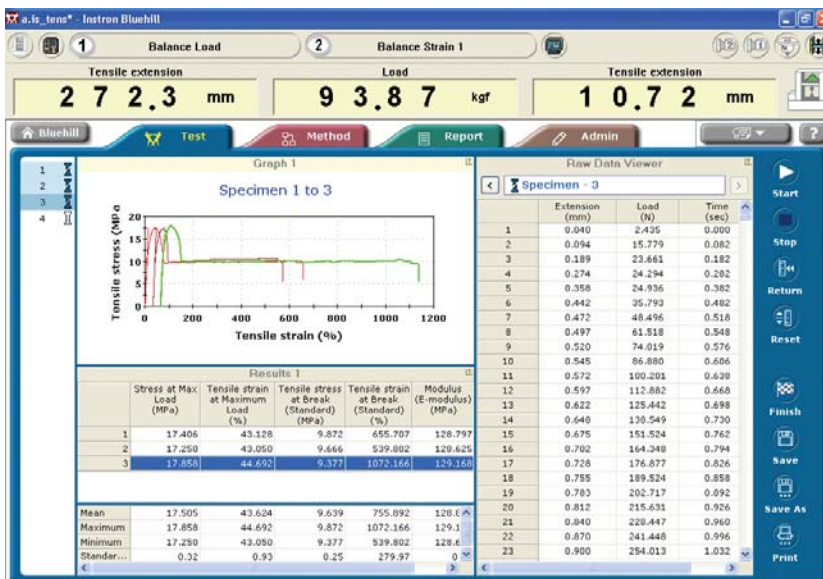
Enhanced Presentation Tools



Multiple runtime graphs with a 'Zoom' on the break area



Three dimensional graphical representation of the test curves in real time



Display, export, or copy and paste the test's raw data points

The optional 'Reports and Graphs' pack adds that final professional finish to your results. 'Reports and Graphs' is ideal for laboratories that need report flexibility above what is available within Bluehill[®] 2's standard report templates. Offering tools that are easy-to-use and learn, 'Reports and Graphs' allows you to customize your own effective and professional quality reports. The report preview allows full view of the design layout and live WYSIWYG ('What You See Is What You Get') displays of the actual test report as the tests are run. Choose one of the many professionally-designed report templates created for material testing applications, or create and save your own style for reuse with future tests.

The new runtime graphics greatly increase your flexibility to configure the display screen. All elements of the graphical presentation can be edited, including, but not limited to, graph type, format, fonts and styles. You can even view a worksheet of the test's raw data points.

Other Powerful Features and Benefits

A variety of capabilities associated 'Reports and Graphs' pack include:

- User defined raw data export
- User defined results export: results and/ or statistics
- Export test results to Microsoft® Access
- Two simultaneous runtime graphs to illustrate different test characteristics
- Double Y-axis graphs for dual plotting on a single graph
- Multichannel
- Auto-scale plotting which adjusts in real time
- Single click zooming to examine detailed portions of the test curve
- Three dimensional and logarithmic scaling
- Reverse axes

Optional Modules

VersaChannel

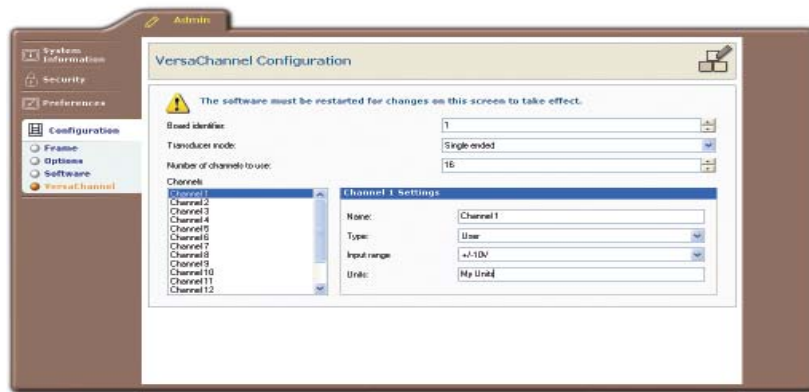
The VersaChannel option lets you create up to 16 additional channels for your testing system and connect extra transducers to those channels.

The VersaChannel configuration screen displays to let you create and configure your additional channels. Set-up the name, type (load, strain, user defined) and range for each channel. You can define the unit label for user transducers, e.g. Deg. C.

Set channels to single-ended or differential, according to your needs. The maximum number of channels depends upon the option that you have purchased and your setting for Transducer mode, as follows:

- The four-channel option provides a maximum of four-channels single-ended, two-channels differential.
- The 16-channel option provides a maximum of 16-channels single-ended, eight-channels differential.

You can use any of these channels in a test method in the same way as any other channel in the system. You might use one, for example, as the trigger for a changeover from ramp 1 to ramp 2 in a test.

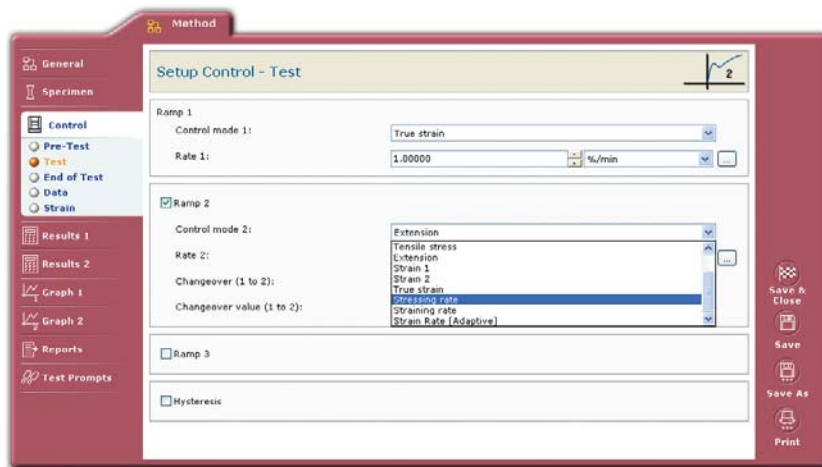


▲ VersaChannel allows up to 16 additional channels of input

Enhanced Control

The 'Enhanced Control' module (available on most systems) provides additional modes of control for advanced applications that require more than the standard mode of position control. With 'Enhanced Control', you can control crosshead movement as a function of load, stress, strain and true strain.

All additional control modes are available during preload, precycling and test phases, and can be selected independently to allow any combination of mode and rate.



▲ Setting strain rates for a metals test

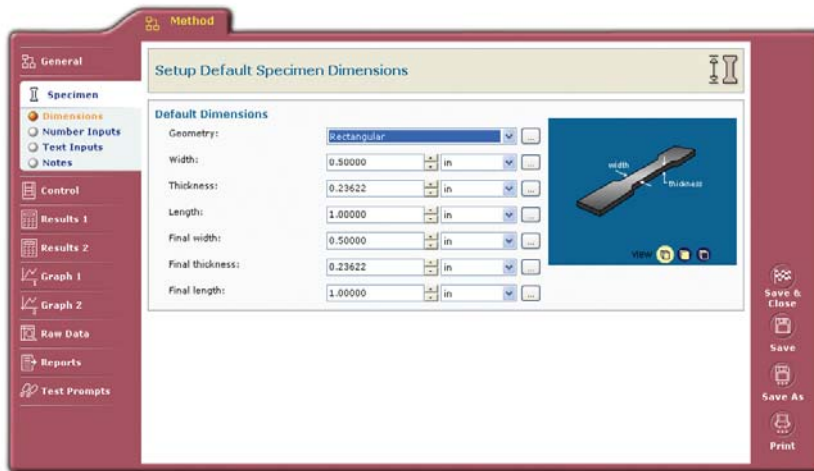
Asphalt Direct Tension Applications Package

The Asphalt Direct Tension application module provides test control, calculations and results for analyzing the properties of asphalt binder per AASHTO specification TP3-98. These preconfigured test methods feature an operator friendly, easy-to-use interface that guides the user through test and results reporting sequences.



▲ AsphaltPro™ test system

Tension Testing



▲ Tension test set-up

The tension application module contains many test set-up parameters that make testing fast and efficient for testing operators. While some applications are complex, many are simple, repetitive tests that require minimal operator intervention. For these needs, Bluehill[®] 2 includes features that translate into major time savings for users.

With a host of calculations, results and analysis tools to ensure fast and accurate output, the tension module supports a wide range of applications. Whether you are testing plastics, rubber, metals, composites or components, you will have the flexibility to meet a variety of international standards as you develop powerful methods for new materials and production needs. Precycling and pretension are just a few of the many features that translate into faster, more repeatable testing.

Tension



Automatic slack correction for textile specimens preserves correct strain values during testing.



Automatic test speed changes for elastomers save time and secure repeatable results.

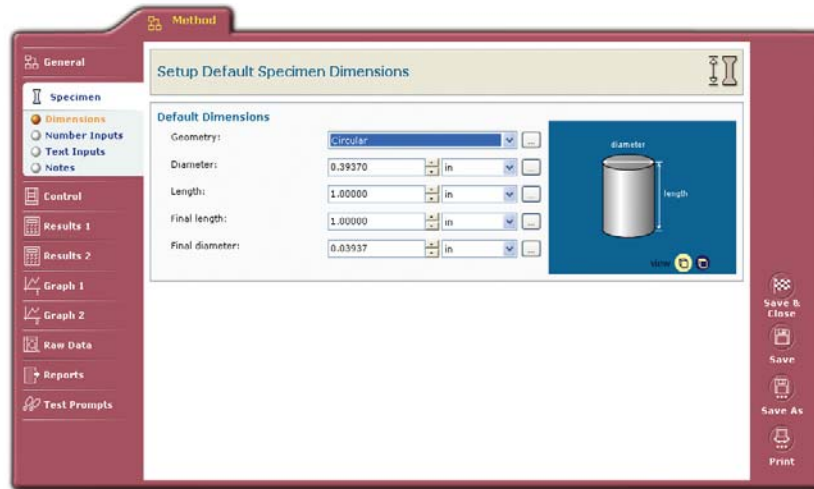


Driving to preload and balancing the extensometer preserves accurate results with no offset errors.

Compression Testing

The Bluehill® 2 compression application module contains numerous set-up parameters that make testing fast, efficient and safe for operators.

Whether you are testing foam, rubber, natural or engineered wood products, composites, concrete, laminates, springs, packaging or components, the Bluehill 2 compression application module provides the flexibility you need. Standard features allow you to automatically determine the actual specimen height and protect your scarce or delicate specimen. Creep and relaxation tests can also be performed with this module.



▲ Compression test set-up



Automatic specimen height determination eliminates anvil separation errors for mattress foam tests.



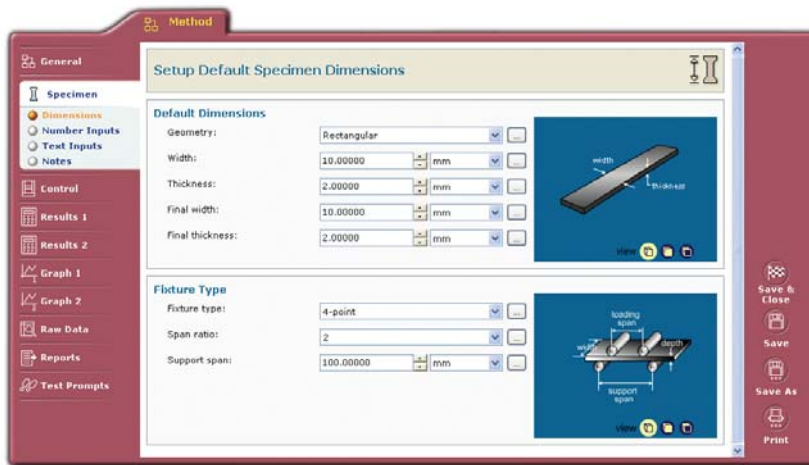
Creep and relaxation tests are common for material like springs.



Built-in 'Specimen Protection' prevents accidental overloading during testing of brittle and delicate material like eggs.

Compression

Flexural Testing



▲ Four-point bend test set-up

The Bluehill®2 flexure application module is ideal for fast quality control checks. Bend and flexure testing are readily performed on a variety of materials. Plastics, components, ceramics and wood can all be evaluated simply, accurately and quickly.

Bluehill 2 supports both three and four-point flexure configurations, with a choice of span ratio including user-defined loading and support spans. This ensures compliance with international standards while providing flexibility for research and development. Similar to the compression module, standard features allow you to automatically adjust extension readouts or use extensometers for precise direct deflection data.



Flexural tests can be performed on larger-sized specimens and components.

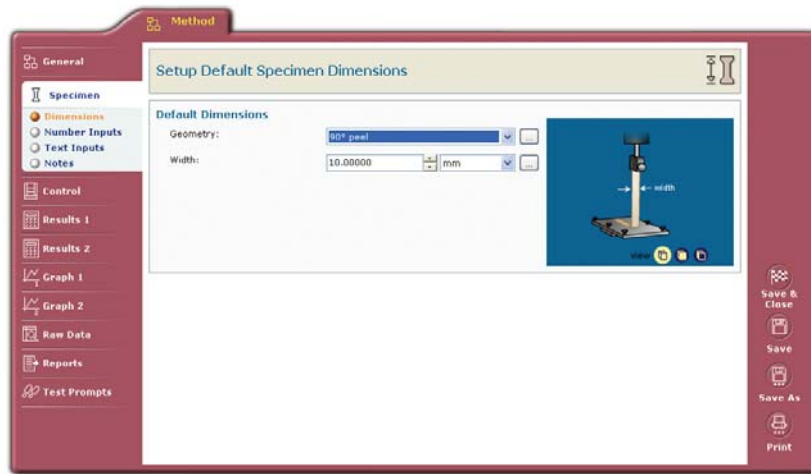
Driving to preload and zero extension eliminates the need for operator adjustments or interactions on standard plastic specimens.

Live displays of outer fiber stress and strain on composite materials compensate for any specimen preload or loadfree anvil travel.

Peel, Tear and Friction Testing

A wide variety of materials and components must be tested for peel, tear or friction strength. Many manufacturers need simple calculations to determine surface roughness, tackiness on plastic packaging print or the adhesive quality of a sticky note. Bluehill® 2 easily accommodates these basic peel, tear and friction testing needs.

Additional calculations, results and analysis tools are included to ensure fast and accurate output for a wide range of typical peel, tear and friction (PTF) tests. Bluehill 2 also automatically calculates the appropriate peel length when you select 90°, 180° or T-type peel methods. Additionally, you can have Bluehill 2 automatically calculate average peel values or you can manually select peel ranges for the calculations.



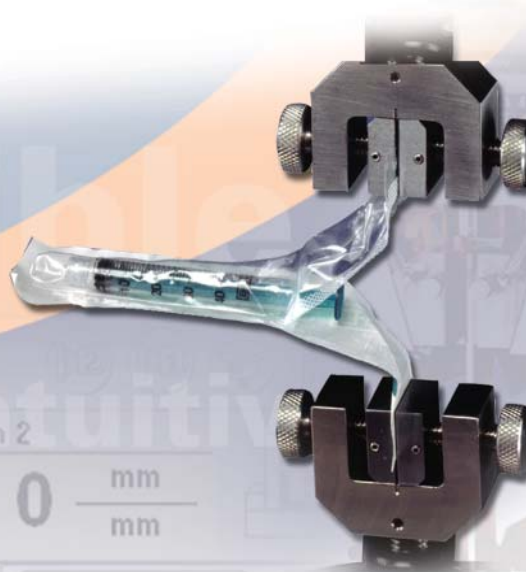
▲ Peel test set-up



Excluding initial peaks on a fabric tear test ensure correct average load values during testing.



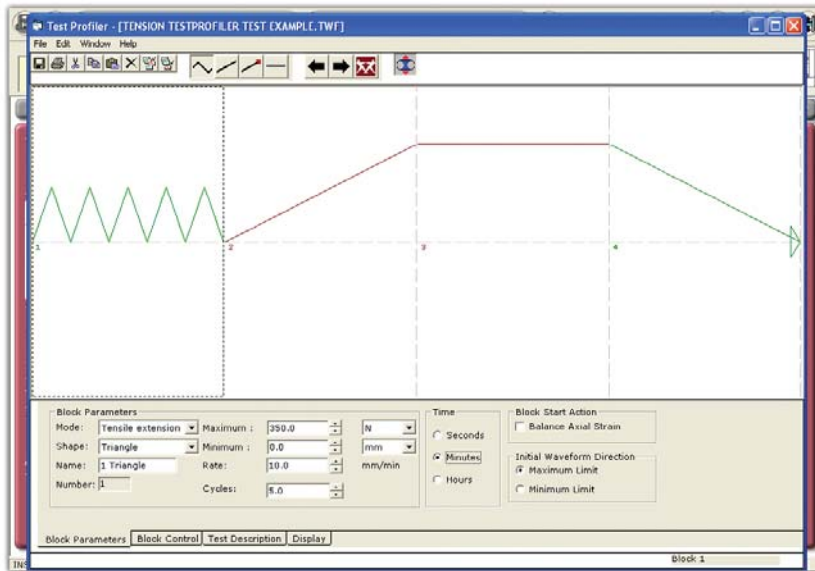
180° peel testing of velcro can generate valuable information associated with peaks and troughs during the separation process.



Ultrahigh data logging rates insure that no important data is missed during testing of medical packaging.

Peel, Tear and Friction

TestProfiler



▲ TestProfiler's graphical test set-up

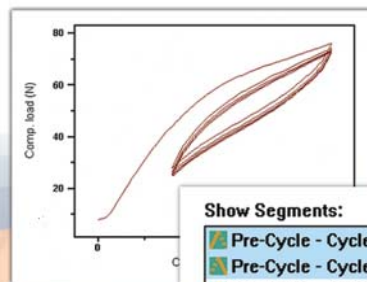
TestProfiler enables fast and easy cyclic test development, and is the perfect addition to the tension or compression application modules. With just a few clicks, TestProfiler allows you to build blocks that link together and define your test. The user sees the test profile graphically on the screen. Once the test method is established, the operator simply starts the test. TestProfiler can be used for standard tests such as Texture Profile Analysis (TPA) in the food industry or simple cyclic testing to failure performed in many quality control.

TestProfiler provides the ability to create custom test routines or profiles for all cyclic and complex testing needs. For example, many laboratories like to simulate a component life cycle on a testing instrument to determine how that component will perform in real life. TestProfiler provides maximum flexibility to simulate almost any lifetime profile for your components.

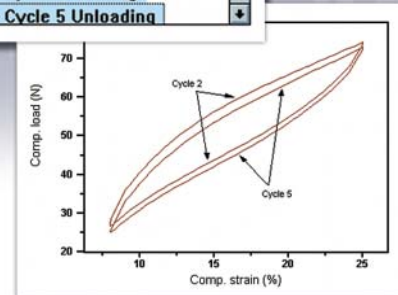
Cyclic



TestProfiler covers a wide range of applications including: foam compression, elastic fabrics, TPA, tack testing, as well as any basic or complex cyclic routine.



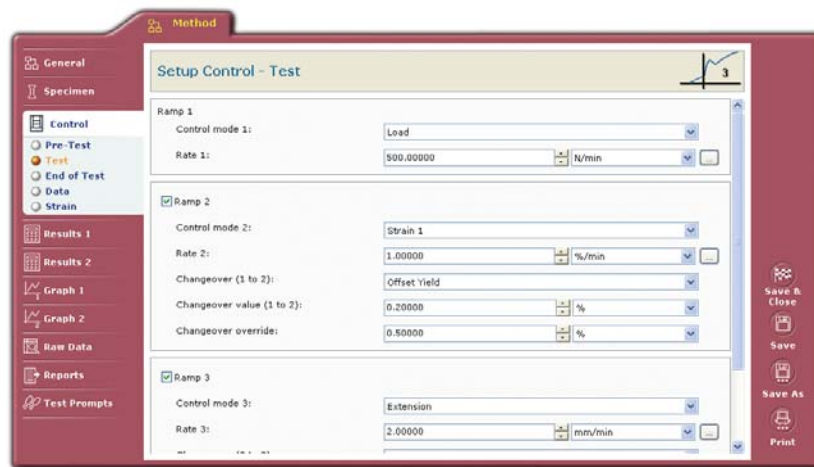
- Show Segments:**
- Pre-Cycle - Cycle 2 Loading
 - Pre-Cycle - Cycle 2 Unloading
 - Pre-Cycle - Cycle 3 Loading
 - Pre-Cycle - Cycle 3 Unloading
 - Pre-Cycle - Cycle 4 Loading
 - Pre-Cycle - Cycle 4 Unloading
 - Pre-Cycle - Cycle 5 Loading
 - Pre-Cycle - Cycle 5 Unloading



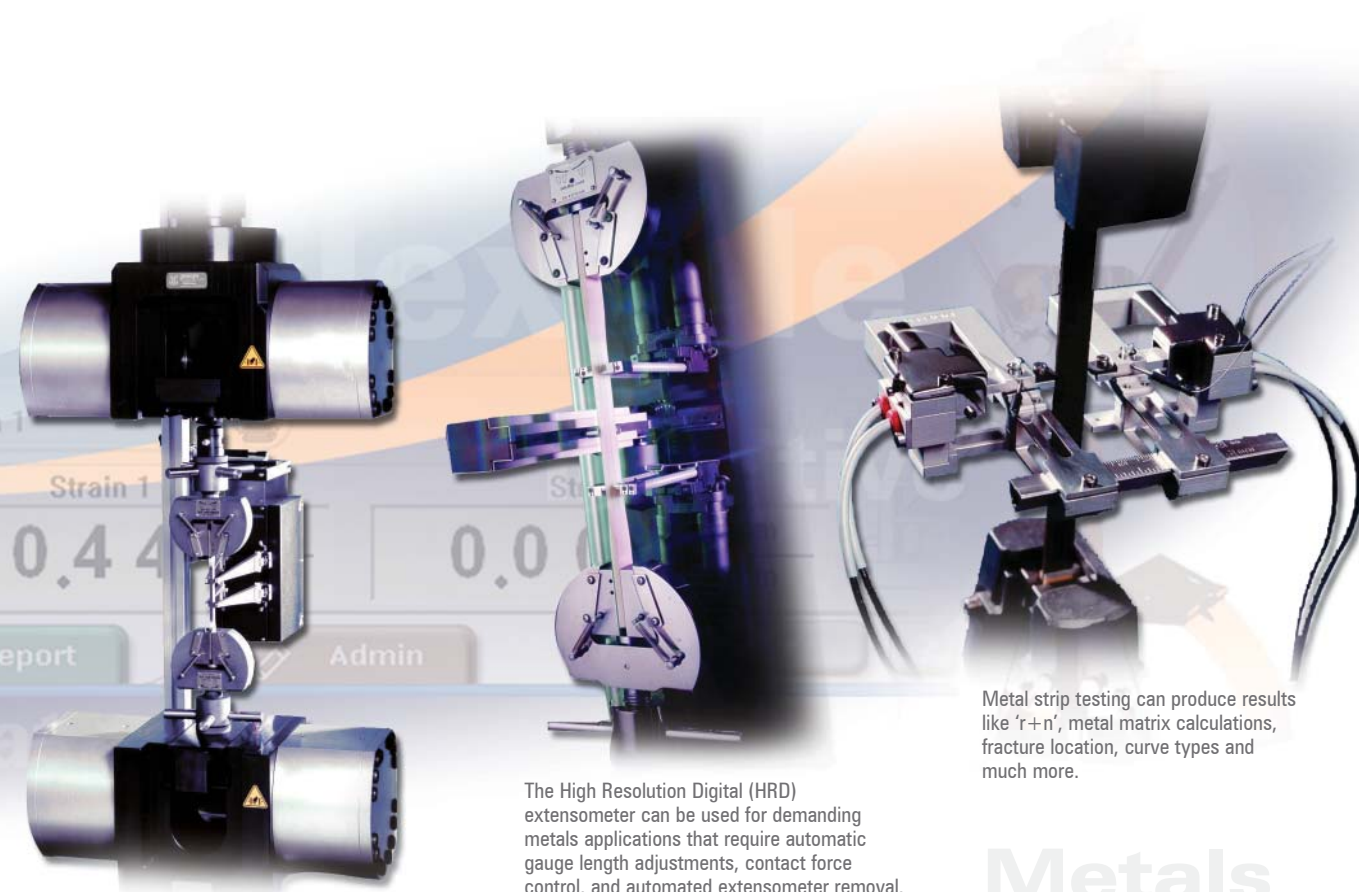
Filtering the data allows you to view and access only the data that is important to your test.

Metals Testing

The Bluehill® 2 metals application module provides standard functions for basic quality control applications. The module contains all the features you need to perform tensile tests easily and accurately on a wide range of metallic materials. For more complex requirements, Bluehill 2 adapts to the material properties during testing to ensure correct change points are used for different rates. Bluehill 2 supports many common international standards for tensile and 'r + n' tests including EN 10002 Part1, ISO 6892, ISO 10113, ISO 10275, ASTM E 8, EN 10130, ASTM E 517 and ASTM E 646.



Multiple ramp set-up for metals test



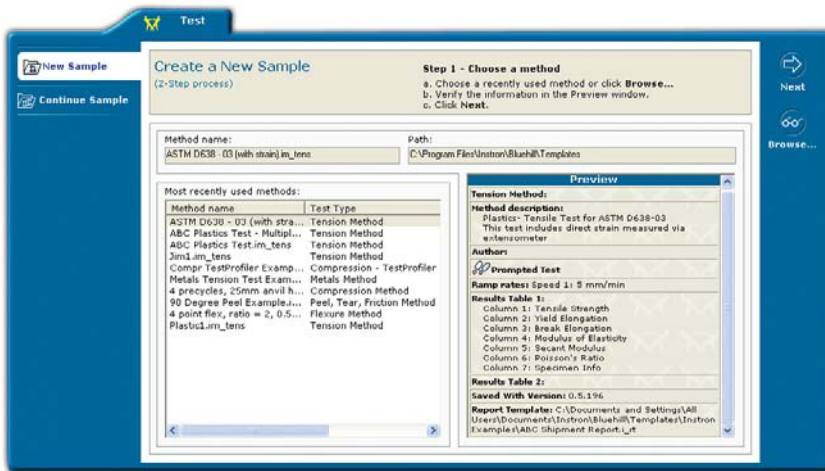
The Digital Metals Automatic (DMA) extensometer can be used with high capacity Demgen grips for simple and quick metals testing.

The High Resolution Digital (HRD) extensometer can be used for demanding metals applications that require automatic gauge length adjustments, contact force control, and automated extensometer removal.

Metal strip testing can produce results like 'r+n', metal matrix calculations, fracture location, curve types and much more.

Metals

Standards for Testing



▲ Configure the software to meet ASTM, ISO, EN or DIN standards

Standardized Test Methods

A large library of standard test methods are available for Bluehill[®] 2, eliminating the need to look up details of ASTM, ISO, EN or DIN standards and to manually configure the software to meet the standard. The test methods cover hundreds of applications ranging from basic tensile testing to the highly detailed EN 10002 metal standard. You can also preview the test method before opening it to ensure that you have selected the right one.



▲ For TPA tests

Bluehill 2 Test Method Templates

Bluehill 2 Test Method Templates - ASTM Library

Example tension, compression, flexure, peel, tear, friction test methods designed in accordance with the most popular and widely-used ASTM test standards. Includes: ASTM D 638 Plastics, ASTM D 790 Flexure, ASTM D 412 Rubber, ASTM D 1894 Peel, etc. Methods can be easily modified and readily run to meet the user's specific test needs.

Foam Compression Test Method Templates - TestProfiler Option

Templates for the following standards are included:

- ASTM D 3574 B1, B2 and C
- BS 4443 part 1 methods 5A and 5B
- BS 4443 part 2 methods 7A and 7B
- DIN 53576 methods A, B and C

Elastic Fabric Test Method Templates - TestProfiler Option

Templates for the following standards are included:

- ASTM D 2731
- BS 4952 Sections 2.1, 2.2, 2.3 and 2.4
- DIN 53835 Parts 2 and 4
- DIN 53577
- ISO 2439 Methods A, B and C
- ISO 3386 Parts 1 and 2
- NFT56-111

Texture Profile Analysis (TPA) Test Method Templates - TestProfiler Option

Includes double bite test method



▲ ASTM D 412, rubber dogbone test



▲ ASTM D 1894 coefficient of friction testing

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Nobody knows material testing like Instron, and nobody knows more about the capabilities of your Instron system than Extra Instron Services. Instron has been driving product development, quality control, and research for companies since 1946. Put this experience to work for you to improve the strength, extend the lifespan, reduce costs, increase reliability, improve the safety, and refine your products and processes to maintain and improve your competitive position. We offer a variety of services to get the most out of your investment extend the life of your Instron system, and provide you with traceable results to worldwide standards.

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▲ WSA (Web Support Agreements)



▲ Priority e-mail support



A variety of hands-on ► training options available

Bluehill[®] 2 Specifications

Universal Application Characteristics

Application	Description
Report Output Formats	PDF, HTML, Microsoft [®] Word 2000
E-mail	Automatically emails the report at the tests conclusion
Copy and Paste	Take result tables and/ or graphs from Bluehill 2 and paste them into your favorite Microsoft application
ASCII Export	Raw data and result can be automatically exported at the end of test
Merlin [™] Method Conversion	Bluehill 2 has a conversion routine that allows direct usage of Merlin test methods and data (not manual)
Specimen Protect	Avoids inadvertent specimen damage during grip or specimen positioning (not available on 3300, 4200, 4300 and 4400 series)
Intelligent Data Acquisition	Provides the highest level of flexibility in data collection to ensure that data rates are at their highest when test conditions are changing the most with rates up to 5 kHz depending on electronics controller
Load Cell Balance/ Drift	Load cell balance can be automatically checked at a user-defined interval to ensure high quality test data when using low force load cells (not 4200, 4300 and 4400)
Security Control	Provides multiple user access levels to ensure that test methods, results and reports are only modified by authorized personnel



▲ Needle testing fixture

Specifications for Tension, Compression and Flexure Applications

Test Control	Description
Preload	Automatic preload to user-defined load or stress value
Precycling	Independent maximum and minimum cyclic limits with user-programmable control mode and rate (tension and compression only)
Test Speeds	Two programmable test speeds with user-defined changeover criteria (tension and compression only)
Control Modes	Standard: position control With the enhanced control option: load, stress, strain or true stress control (excluding 4200, 4300 and 4400 systems)
Creep/ Relaxation	Ramp-based on available control modes to a user-defined hold value (based on any channel) followed by a load, strain or extension hold for a user-selectable time or other channel value
Test End/ Break Detection	Automatic stop or return based on: rate of load fall, load fall limit, load fall limit with delay, load fall by percent or absolute value or any channel value (load, stress, strain, extension, time, etc.)

Test Results	Description
Modulus	Six types of modulus calculations (Young's, chord, secant, tangent, segment and automatic) with user-selectable calculation regions, source channels and results (x-intercept, y-intercept, modulus or energy to x-intercept)
Yield	Four types of yield calculations (zero slope, slope threshold, off-set and lower) with user-selectable source channels and results
Break	Five types of break calculations (load value, percentage of maximum load, load/ extension rate, load/ strain rate and maximum load in the last 100 ms before end of test)
Preset Points	Unlimited number selectable by channel value, cursor or external trigger point (PIP)
Peak Values	Maximum or minimum, absolute and local peaks on any channel
Slack Correction	Three types of correction (automatic, Young's modulus or channel value) to remove slack related off-sets from displacement and/ or initial gauge length values (specimen height determination for compression)
Creep/ Relaxation	Total and delta creep and relaxation
User Calculations	Custom calculations based on standard results, specimen data or other user inputs are fully supported
Seam Slippage	Load at seam slippage with input from load reference point and target



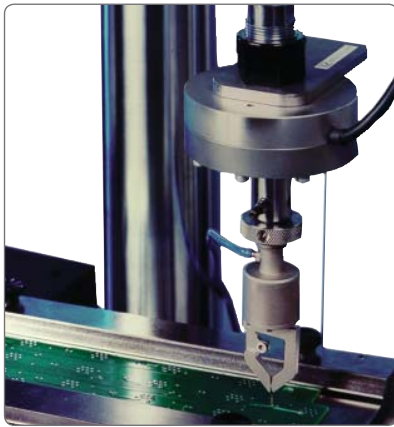
▲ Toothbrush flexural test

Specifications for Test Profiler Applications

Control Functions	Description
Number of Segments	85 segments maximum (ramp and hold waveforms count as one segment while a triangle waveforms count as two segments)
Control Modes	Position with standard Bluehill 2 or load, strain and stress with enhanced control
Waveforms	Ramp, hold and triangle
End Points	Absolute or relative
Block Transfer	Automatic transfer at block end point
Block Repetitions	Unlimited repetitions from last block to a specified intermediate block
Block Time	Hours, minutes and seconds

Test Results	Description
Results Availability	All Bluehill 2 application calculations.
Results Assignment	Results can be assigned to any block or segment in a sequence

Graphical Features	Description
Set-Up	Supports conventional click and drag selection of end points, icon-based block insertion/ deletion, cut and paste block duplication, and a variety of waveforms (ramp, hold and triangle)
Compatibility	Must have tension and/ or compression application to use TestProfiler
Test Data	Filtering of unwanted blocks from graphs.



▲ Peel test on a printed circuit board

Specifications for Peel, Tear and Friction Applications

Test Control	Description
Preload	Automatic preload to user-defined load or stress value
Control Modes	Position control
Automatic Grip Control	Pneumatic grips, can be programmed to close at a pretest load value, open at an excess pretest load value, auto-start after grip closure and auto-release after test completion
Test End/ Break Detection	Automatic stop or return based on: rate of load fall, load fall limit, load fall limit with delay, load fall by percent or absolute value or any channel value (load, stress, strain, peel length, peel extension, time, etc.)
Test Types	90° peel, 180° peel, T-type peel, tear and friction

Test Results	Description
Peel and Tear	Average load, average load/ width, energy at first peak, delta energy, delta peel extension, peak, range, number of peaks, number of troughs, median peak
Friction	Coefficients of static and dynamic friction
Average Values	Average of n highest peaks, average of n lowest peaks, average of n peaks and troughs, average of n highest peaks in a region, average of all peaks and average load (total energy divided by displacement)
Start Points	First peak, percentage of total extension, peel extension, percentage of peel extension, cursor-selected or any channel value
End Points	Percentage of maximum load, peel extension, delta peel extension, percentage of peel length, percentage of total peel extension, cursor or any channel value
Break	Five types of break calculations (load value, percentage of maximum load, load/ peel extension rate, maximum load in the last 100 ms before end of test or cursor selected)
Preset Points	Unlimited number selectable by channel value, cursor or external trigger point (PIP)
Peak Values	Maximum or minimum, absolute and local peaks on any channel
User Calculations	Custom calculations based on standard results, specimen dimensions or other user inputs are fully supported



▲ Clip-on extensometer for metals test

Specification for Metals Applications

Test Control	Description
Preload	Automatic preload to user-defined load or stress value
Precycling	Independent maximum and minimum cyclic limits with user-programmable control mode and rate
Test Speeds	Three programmable test speeds with user-defined control modes and changeover criteria
Control Modes	Support for hysteresis reversal as per EN 10002-1 Position, stressing rate, straining rate (including compensation for lack of upper yield point)
Test End/ Break Detection	Automatic stop or return based on: Rate of load fall, load fall limit, load fall limit with delay, load fall by percent or absolute value or any channel value (load, stress, strain, extension, time, etc.)

Test Results	Description
Modulus	Nine types of modulus calculations (e-modulus, hysteresis, metal matrix, Young's, chord, secant, tangent, segment and automatic) with user-selectable calculation regions, source channels and results (x-intercept, y-intercept, modulus or energy to x-intercept)
Yield	Five types of yield calculations (zero slope, slope threshold, off-set, upper and lower) with user-selectable source channels and results including yield point elongation (YPE/ Ae)
Tensile Strength	Any channel value at the tensile strength point
Nonproportional Elongation	Six types of calculations to suit different standards
Break	Five types of break calculations (load value, percentage of maximum load, load/ extension rate, load/ strain rate and maximum load in the last 100 ms before end of test)
'r' and 'n'	Any number of 'r' (planar anisotropy) and 'n' (work hardening exponent) results with automatic and user-selectable regions
Reduction in Area	Ductility measured from initial and final specimen cross-sectional area using post test specimen dimension input
Preset Points	Unlimited number selectable by channel value, cursor or external trigger point (PIP)
Peak Values	Maximum or minimum, absolute and local peaks on any channel
Slack Correction	Three types of slack correction (automatic, Young's modulus or channel value) to remove slack related off-sets from displacement and/ or initial gauge length values
Break Location	Automatic indication of specimen failure location relative to extensometer gauge length
User Calculations	Custom calculations based on standard results, specimen dimensions or other user inputs are fully supported

The Bluehill®2 Name

Instron named its new software, Bluehill 2 after the well-known Blue Hill Observatory Science Center in Milton, Massachusetts. Founded in 1885, the observatory has been recognized around the world for pioneering work in weather research and climate study. The Blue Hill Observatory presents beautiful views of downtown Boston and the entire South shore of Massachusetts. You can visit their website for more of their history at www.bluehill.org.



▲ Blue Hill Observatory photo by Bob Ryan

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