Utilizing on-board microprocessor technology the Ray-Ran Microprocessor Controlled Falling Dart Impact Tester has taken falling dart testing machines to an advanced level at an affordable price. Built with operator simplicity in mind, its ease of operation and high accuracy makes it ideal for product development and quality control within production, research and development labs and teaching institutions.

The break energy that causes thin flexible materials such as plastic film, paper and composite sheets to fail under specified conditions of impact from a free falling dart has never been easier to establish. Complying with the ASTM D1709 Method A & B the apparatus uses photo electric cells to measure the energy (joules) to break or cause failure to the sample being tested. Usually manual testing requires at least sixty drops for each sample to gain a good result. For the Ray-Ran Microprocessor Controlled Apparatus this is greatly reduced. For perfect energy readings on new samples, a quantity of film will be required to firstly establish the working range of the drop weight required as the tup must completely fall through the sample to give an energy reading during a test. This test is very simple to conduct using the Break Mass test. Once the weight to pass through the sample has been established a working range of 50% of the tup weight should be good enough to produce repeatable results. If the break mass is already known then the Break Energy test will give you your energy reading in Joules.

The methods of holding the test specimen and releasing the dart are designed so that they may be accurately repeated for each test performed. Test specimens are simply clamped in the unique two piece pneumatic clamp system which gives a constant tension across the surface area of the specimen ensuring test repeatability. A dart of a known weight is then allowed to free fall and hit the sample. To comply with the relevant test standards dart drop heights of either 660mm or 1500mm are easily obtained using the built in telescopic assembly. The dart release mechanism is solenoid actuated for easy release and requires the use of both hands to release the dart to ensure optimum operator safety. A fully electrical interlocked guard is also supplied to ensure the operators safety from falling and rebounding darts and for ruptured samples a dart return shoot is supplied for easy dart retrieval after the test.

The large on board liquid crystal display (LCD) provides simple on screen instruction and using the alpha/numeric keypad test parameters such as user names, material reference numbers, batch numbers and tup types are entered and stored in operator lists for future recall and results presentation. Selecting the type of test is done at the press of a button and the testing parameters such as drop height, tup weight and sample size are entered to give the required testing conditions. At start of each batch of tests a simple calibration of the apparatus is conducted. Batch statistics of mean, standard deviation and co-efficient of variation are automatically updated after each test and results are shown in graphical and tabular format for analysis when downloaded to the supplied Techni-Test PC software. For quality control purposes High and Low limits can be defined when test results are downloaded showing the user instantly if the material is a pass or fail.

The apparatus is supplied as standard with Ray-Ran’s Techni-Test Windows based PC software for connection to the apparatus via an RS232 or ethernet connection. Test results can be printed directly from the Techni-Test software or can be saved and exported as .CSV files which can be opened with Microsoft Excel in tabular form which can be manipulated to your specific requirements such as preparing a graphical presentation or copying the results to a Word document for a report presentation if required. If the apparatus is connected to the PC via the ethernet connector over a LAN network then the RS232 can be used for connection to an optional thermal printer for direct printout by the operator.
Techni-Test makes a strong impact

Techni-Test is the easy to use software package supplied as standard with the Advanced Falling Dart Impact Tester which allows user defined test data and test results to automatically download from the apparatus for results presentation and data reporting.

Test data downloaded to Techni-Test includes operator, material reference, batch reference, test type, impact velocity, hammer weight and impact energy.

From the results graph each impact test value is clearly identified giving accurate data analysis of the material under test. The graphical impact results can be displayed in KJ/M or KJ/M² by simply selecting the appropriate results profile tab at the top of the graph. By placing the cursor over each plotted point the impact value can also be read on the screen. For internal Quality Control procedures at a glance high and low limits are clearly displayed on the graph in red showing instantly if the material is a pass or fail. High and low limits are set on the main screen within the Techni-Test software so they can be altered easily without having to re-enter test data and re-test material samples. Tabular results are also displayed under the test results tab for quick results processing and comparison analysis between test samples. Batch statistics such as Mean and Co-efficient of Variation (COV) are also displayed and are updated after each test result is downloaded.

Test results can be printed directly from the Techni-Test software in a report format or can be saved and exported as .CSV files which can be opened with Microsoft Excel in tabular form which can be manipulated to your specific requirements such as preparing a graphical presentation or copying the results to a Word document for a report presentation if required.

In Test Results Viewer mode, users have the ability to upload saved results from previous test for Material Comparison, Data Manipulation or File Export. Abnormal results that could be caused by air voids are clearly identified and can be removed from the test data bringing the batch statistics into a normal range ensuring that the test procedure does not have to be repeated saving time and material. Test results displayed in viewer mode can also be exported as .CSV files easily.

SPECIFICATIONS

- Advanced dedicated microprocessor control
- Touch membrane Alpha / Numeric keypad
- Easy to read liquid crystal display
- Sequence logic menu auto prompt selection
- RS232 interface connector
- Ethernet Interface connector for LAN Networking
- Self-calibration procedure
- Photo electric cell technology
- Variable drop height adjustment as standard 660mm – 1500mm
- Pneumatic clamping system
- Constant sample tension for repeatability
- Solenoid actuated dart release mechanism with audible pre-warning

- Dart return shoot
- 38.1mm (1 ½”) and 50.8mm (2”) spherical darts
- Binary weight set supplied as standard
- Electrical interlock safety guard
- Tabular and graphical statistical analysis
- Techni-Test PC software
- Product User Manual
- CE declaration certificate
- Traceable Calibration Certificate
- 1 year return to base warranty

Falling Dart Impact Tester - Advanced
Model 43-61-02

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Specifications subject to change.