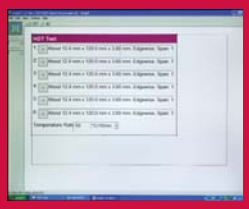
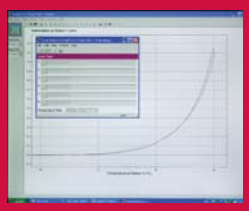
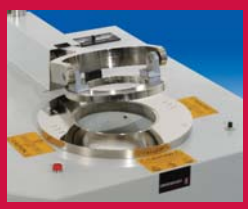






LLOYD INSTRUMENTS™
An AMETEK Company

DAVENPORT™
An AMETEK Company

Plastics & Polymer Testing Instruments

Plastics & Polymer Testing Instruments

Lloyd Instruments offers the complete solution for polymer testing applications, from raw material to finished product.

Our established range of Davenport™ polymer test instruments, specified in many international testing standards, allow critical polymer parameters to be determined, including melt flow index, melt flow rate, melt volume rate, intrinsic viscosity of PET, impact strength of plastic film, density measurement, HDT and VICAT. In addition, Lloyd Instruments manufactures a wide range of materials testing machines for evaluating the mechanical properties of polymers, plastics and other materials.

Manual and Automatic Melt Flow Indexers

Specifically designed for determining melt flow index (MFI), melt flow rate (MFR), melt volume rate (MVR) and melt density/viscosity of polymers to ISO 1133 and ASTM D-1238 Methods A & B.

The MFI Series consists of two precision-engineered models, the manual Model 9 (MFI-9) and automatic Model 10 (MFI-10).

Both have excellent temperature control and provide outstanding accuracy and repeatability of results.

Ideally suited to the production environment, R&D applications and product quality control testing to ensure batch-to-batch consistency.

A wide range of accessories are available to automate your testing, including our powerful NEXYGEN™ data analysis software (MFI-10 only).

Manual Melt Flow Indexer MFI-9

- Meets ISO 1133 and ASTM D-1238 Method A
- Allows manual calculation of MFI and MFR
- Simple set up, operation and maintenance
- Ideal for low volume tests in quality control and production
- Audible prompts guide user through tests
- 5 user definable test methods

Automatic Melt Flow Indexer MFI-10

- Meets ISO 1133 and ASTM D-1238 Methods A & B
- Automatically calculates MFI, MFR, MVR and Melt Density/Viscosity using optional auto flow rate timer
- Simple set up, operation and maintenance
- Ideal for quality control, production and R&D
- Up to 10 standard tests saved and recalled
- 10 user definable test methods
- Optional auto flow rate timer, auto weight loader, auto cut off device
- Optional corrosion resistant models
- Optional **NEXYGEN software** for powerful data analysis and other benefits including:
  - Ability to run two MFI tests simultaneously on one PC or one MFI test and one test using a materials testing machine
  - Loads test parameters automatically
  - Clear instructions and guidance
  - Provides graphical, analytical and report writing features
  - Highly repeatable results achieved by the unique 'Bubble Eliminator' feature

PET*Plus* Instrument For The Intrinsic Viscosity (IV) Measurement of PET Polymers

The unique Davenport PET*Plus* instrument is a ground-breaking alternative to the costly and hazardous solvent method for testing PET. The PET*Plus* is designed to determine the intrinsic viscosity (IV) of PET using safe testing methods at virtually all stages of the production process. It can be operated in stand alone mode or used with our powerful data analysis software package, NEXYGEN*Plus* PET. The microprocessor controlled system provides up to 600 test results and measures optimum flow rate, calculates IV, measures the degradation factor and provides the mean and standard deviation for the batch.

- Unique microprocessor-controlled instrument for solvent-free IV testing of PET
- Safe environmentally-friendly testing
- Low ongoing running costs compared to high cost of solvent purchase
- Stand alone operation or can be used with software
- Provides full analysis of results and statistics. 600 results can be stored and displayed
- Fast analysis of samples (within 20 minutes)
- Includes training mode
- Can monitor IV throughout the process from incoming resin to finished product

HDT/VICAT Instruments

The Davenport HDT/VICAT*Plus* instrument is designed to determine the temperature deflection of thermoplastic samples to national and international standards.

The unit consists of a temperature controlled oil bath, with six selectable testing stations, which may be configured for either HDT or VICAT test methods. The weight loading mechanism and test fixture mountings are designed as a single unit, which safeguards the operator by preventing contact with the heating medium.

- Performs tests to national and international standards:
  VICAT: EN ISO 306, ASTM D1525-98 1/10, BS 2782 Part 1: Method 120C 1990
  HDT: EN ISO 75-1 and 75-2, ASTM D648-98C
- Determines the temperature of deflection of thermoplastic samples
- Simple set up, operation and maintenance
- Ideal for industrial and laboratory environments
- Six working stations with individual temperature and deflection sensors
- Integral interface allows test programming and indicates results on LCD
- Unrivalled safety features including nitrogen safety blanket connection supplied as standard, over-temperature cut out, tank safety – will not open until cooled
- Full PC integration and control using optional NEXYGEN data analysis software

Density Measuring Columns

The Davenport two column density measuring instrument is ideal for high accuracy determination of the density of solid materials, notably plastics, by the technique described in ASTM D 1505-68, ISO 1183 and BS 2782 Part 6: Method 620D.

- Meets ASTM D 1505-68, ISO 1183 and BS 2782 Part 6: Method 620D
- Designed to measure the density of solid materials
- Simple set up, operation and maintenance
- UKAS accredited and certified floats
- Nine floats per column supplied as standard
- Re-calibration service (UKAS) with certificate
- Accuracy of readings to 0.0001 g/ml with density column ranges within 0.05 g/ml
- Back lighting of column aids float and sample visibility
- Column solution filling apparatus supplied for ease of use

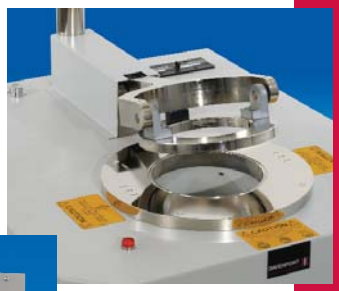
Falling Dart Impact Testers

Used by major film manufacturers and converters, the falling dart impact tester provides a quick and simple method for determining the impact resistance of thin flexible materials such as plastic films, plasticised papers and composite sheets.

The tester establishes the energy required to tear film samples under specified conditions of impact of the free falling dart.

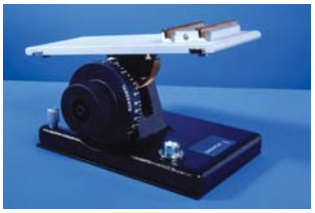
Three models A, B and C are available.

- Meets EN ISO 7765-1:2004 and ASTM D1709 Methods A & B (depending on model used)
- Determines the impact resistance of thin flexible materials
- Simple set up, operation and maintenance
- Floor mounted
- Dual height option with extra weights for stronger samples



Inclined Planes

The Davenport Inclined Plane is ideal for accurate, simple and quick checks on coefficients of friction. The method involves increasing the angle (up to 60°) of inclination of a plane surface covered with the test material.



A free sled, also covered in the material will start to slide at the point at which gravitational force overcomes the static friction between the two.

- Designed for determining the coefficient of friction
- Inclination is marked off in tangents for direction readings of static and kinetic coefficient of friction
- Simple set up, operation and maintenance free
- 'Slip' readings
- Ease and speed of use. No further calculations required.
- Accurate control

MATERIALS TESTING SYSTEMS

Lloyd Instruments materials testing machines (1kN-300kN, 225 lbf-67443 lbf) are designed to determine the physical and mechanical properties of raw materials, components and finished products.

Used to test polymers and plastics as well as a wide range of other materials including packaging and paper, our machines are ideal for testing the tensile and compression strength of materials as well as flexure or bend, friction, tear, peel, adhesion, shear, ductility, insertion, shear strength, delamination and many other parameters.

Our powerful NEXYGEN*Plus* material test and data analysis software is ideally suited for routine QC testing, R&D and complex multi-stage testing with added extensive automation features to provide error-free, rapid and repeatable tests.

Choose from an extensive library of tests to international standards or customise the software to your own internal test methods. In-built security and audit trails ensure test data security.

CERTIFICATE No GB98/11777

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AMETEK®
MEASUREMENT & CALIBRATION TECHNOLOGIES

www.ametek.com

UK
Lloyd Instruments Ltd
12 Barnes Wallis Road
Segensworth East, Fareham
Hants, PO15 5TT

Tel +44 (0)1489 486 399
Fax +44 (0)1489 885 118
E-mail uk-far.general@ametek.co.uk
Web www.lloyd-instruments.co.uk

USA
AMETEK Measurement & Calibration Technologies Division
8600 Somerset Drive
Largo, Florida 33773

Tel +1 727 536 7831
Tel +1 800 527 9999 (USA only)
Fax +1 727 539 6882
E-mail chatillon.fl-lar@ametek.com
Web www.lloyd-instruments.com
www.chatillon.com

Far East
AMETEK Singapore Pte Ltd
10 Ang Mo Kio Street 65
#05-12 Techpoint
SINGAPORE 569059

Tel +65 6484 2388
Fax +65 6481 6588
E-mail aspl@ametek.com.sg
Web www.lloyd-instruments.com

AMETEK, Inc.
Shanghai Representative Office
Rm 912, Metro Tower
30 Tian Yao Qiao Road
Shanghai 200030
China

Tel +86 21 6426 8111
Fax +86 21 6426 7818 Ext 12
E-mail lloyd@ametek.com.cn
Web www.lloyd-instruments.com.cn

France
AMETEK S.A.S.
Rond Point de l'Epine des Champs
Buro Plus - Bât. D
78990 Elancourt

Tel +33 (0)1 30 68 89 40
Fax +33 (0)1 30 68 89 49
E-mail general.lloyd-instruments@ametek.fr
Web www.lloyd-instruments.fr

Germany
AMETEK GmbH
Rudolf-Diesel-Straße 16
D-40670 Meerbusch

Tel +49 (0)2159 9136-510
Fax +49 (0)2159 9136-39
E-mail info.mct-de@ametek.de
Web www.ametek.de

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