

L&W Crush Tester

Lorentzen & Wettre Products | Paper testing



L&W Crush Tester tests corrugated board, liner and fluting as well as performing compression tests on small boxes. The instrument measures new crush properties such as flat crush hardness and the total energy absorbed during a FCT measurement. A built-in plate distance sensor can also be used to measure the corrugated board thickness.

Benefits

- Easy to use with pre-programmed start position and evaluation of measurements, all for easy shift between measurements such as RCT and ECT
- Designed for reliable results, especially important when measuring FCT so that the test piece does not shear and cause “leaning” flutes
- Gives automatically correct FCT value (manual settings for each flute type is not needed)
- Measures new crush properties such as flat crush hardness, flat crush energy and flat crush stiffness

L&W Crush Tester has many special features to make measuring easier. Measurement and start positions are memorised by the instrument, which makes the operation very easy. After the measurement, the calculated test result is presented directly on the display with the correct units.

Simple and correct measurement

All programming and settings are made once with a PC, which can then be disconnected from the instrument. After that the instrument is controlled with one or two pushes of a button on the instrument panel. The most commonly used settings are pre-set in the factory. Distinctive features of the measurement plates are their very high parallelism and side stability during measurement; this is critical for obtaining accurate measurement results.

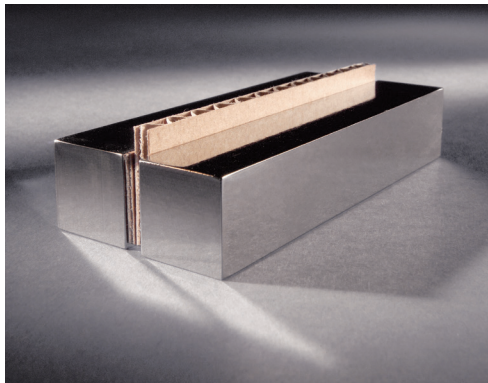
FCT value

To find the right FCT value can be difficult. An onboard calculation program evaluates the third “peak” of the FCT measurement automatically. A built-in plate distance sensor can also be used to measure the thickness of the corrugated board.

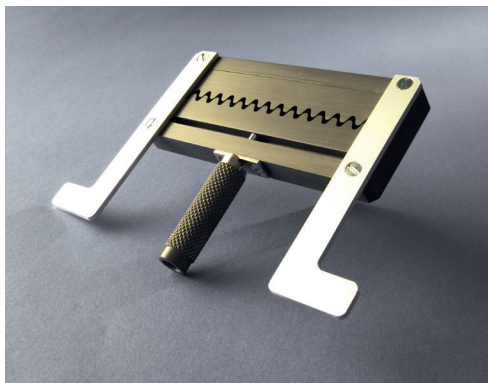
New crush properties

Flat crush hardness is a sensitive measurement used to evaluate crush-damaged corrugated board. Low flat crush hardness can indicate that the corrugated board has already been crushed during the conversion and an ordinary FCT measurement can not always determine this. The instrument can also report the total energy absorbed during a FCT measurement. With special fittings, a basic score test assessment can be made. The quality of the score is important, for example, for the effective assembly and sealing of a corrugated board box. All data can be sent to the computer for storage and to generate statistics. All statistics and measurement data can be printed out on an integrated printer.

ACCESSORIES



L&W ECT sample holder



L&W CCT sample holder



L&W RCT sample holder

ABBREVIATIONS

FCT (Flat Crush Test) – A sample of corrugated board is subjected to increasing force, applied perpendicular to the surface of the board, until the fluting breaks. The FCT value is expressed as the force divided by the sample's surface area.

FLAT CRUSH HARDNESS – A measurement of the corrugated board's yield point in a FCT sample. Equivalent to the first "peak".

FLAT CRUSH ENERGY – The total energy absorbed during a FCT measurement.

ECT (Edge Crush Test) – A sample of corrugated board is subjected to increasing force, parallel to the flutes, until it breaks. The ECT value is expressed as the breaking force divided by the sample's width.

RCT (Ring Crush Test) – A sample of paper or cardboard is placed in a ring formation and subjected to a successively increasing edge compression force until it breaks. The resistance force is measured. The RCT value is expressed as the force divided by the sample's length.

CLT (Concora Liner Test) – measures the same property as RCT, but is carried out in another type of sample holder.

CCT (Corrugated Crush Test) – A sample is corrugated between heated corrugating rolls. The sample is fixed in a special jig that is adapted to the corrugated shape. The crushing force is applied and measured parallel to the top of the corrugating medium. The CCT value is the maximal force that the sample can withstand before it breaks.

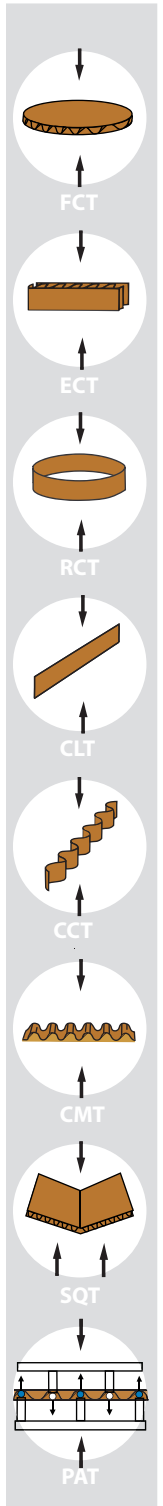
CMT (Concora Medium Test) – A sample is corrugated between heated corrugating rolls. The flute is fixed and held together by a pressure-sensitive piece of tape, so that single-sided corrugated board is imitated. The crushing force is applied perpendicular to the paper's plane and the breaking force is measured. The CMT value is the maximal force the sample can withstand before it breaks.

CMT First Plateau

The initial "damage" of the test piece in a CMT-test. Which could be an indication of the strength potential of the fluting medium, hence the ability to keep the liners apart without lose its own strength.

SQT (Score Quality Test) – A sample is placed on a U-shaped support and pressed by a thin strip, exactly above a score, until it breaks. The ratio between the scored and un-scored values gives the score ratio.

PAT (Pin Adhesion Test) – Adhesion resistance is the maximum force required to separate the linerboard from the fluting with the help of a special sample holder.



Technical specifications – L&W Crush Tester, code 248			
Inclusive	PC connection cable, PC program for settings and calibration via PC, paper rolls, and a case containing accessories for correct positioning the samples		
Measurement range	50–5000 N, 10–1000 lbf, 5–500 kgf		
Instrument			
Stroke length	76 mm (3 in)		
Deformation speed	1–50 mm/min		
Return speed	60 mm/min (2.4 in/min approx.)		
Plate size	125 × 125 mm (4.92 × 4.92 in)		
Results			
Measurement values	- breaking force - score ratio (SQT) - thickness - ECT, FCT, PAT, RCT, CMT, CCT, CLT, CMT First Plateau, flat crush hardness, flat crush energy		
Statistics	- mean value - standard deviation - coefficient of variation - maximum and minimum values of the series		
Connections			
Data	RS232C - connectable to L&W Autoline Data Acquisition Workstation		
Printer	Parallel		
Installation requirements			
Power	75 W		
Options	L&W RCT sample holder L&W CCT sample holder L&W ECT sample holder, unwaxed sample L&W SQT sample holder Dynameter for calibration of load cell		
Dimensions	0.5 × 0.3 × 0.6 m 20 × 12 × 24 in	Volume	0.25 m³ 9 ft³
Net weight	44 kg 100 lb	Gross weight	50 kg 110 lb

Applicable standards

APPITA/AS 1301.449s, ISO 13820

FCT

APPITA/AS 1301.429s, EN 23035, FEFCO No.6, ISO, 3035, SCAN P 32, TAPPI T 825

CMT

APPITA/AS 1301.434s, PAPTAC D.24P, DIN 53143, EN ISO 7263, ISO 7263, SCAN P 27, TAPPI T 809

RCT

APPITA/AS 1301.407s, PAPTAC D.33P, DIN 53134, ISO 12192, JIS P8126, SCAN P 34, TAPPI T 822

CCT

SCAN P 42, TAPPI T 843

ECT

APPITA/AS 1301.444s, DIN 53149, EN ISO 3037, FEFCO No.8, ISO 3037, ISO 13821, SCAN P 33, TAPPI T 811, T 823, T 838, T 839

PAT

APPITA/AS 1301.430s, TAPPI T 821

SQT

TAPPI T 829

Our sample holders comply with the following standards

L&W RCT sample holder:

PAPTAC D.33P, DIN 53134, ISO 12192, JIS P8126, SCAN P34, TAPPI T818, T822

L&W CCT sample holder:

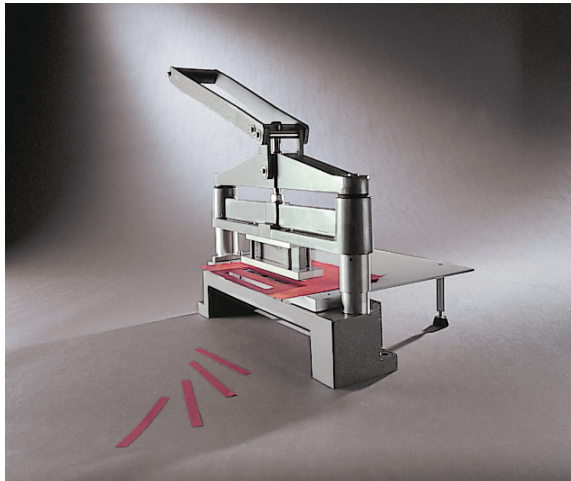
SCAN P42, TAPPI T824, T843

L&W ECT sample holder, unwaxed sample:

APPITA/AS 1301.444s, DIN 53149, EN ISO 3037, FEFCO No.8, ISO 3037, SCAN P33

L&W SQT sample holder:

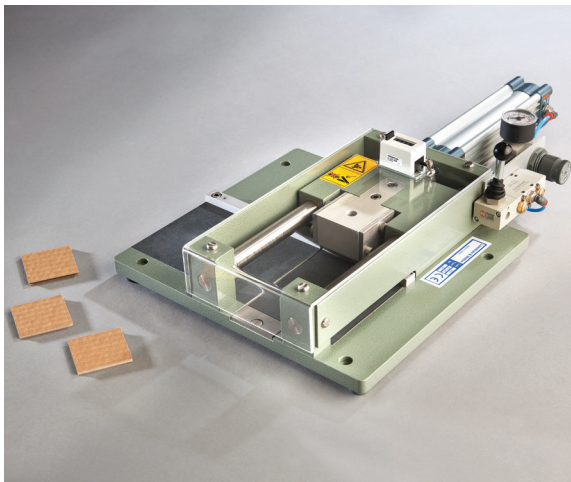
TAPPI T829



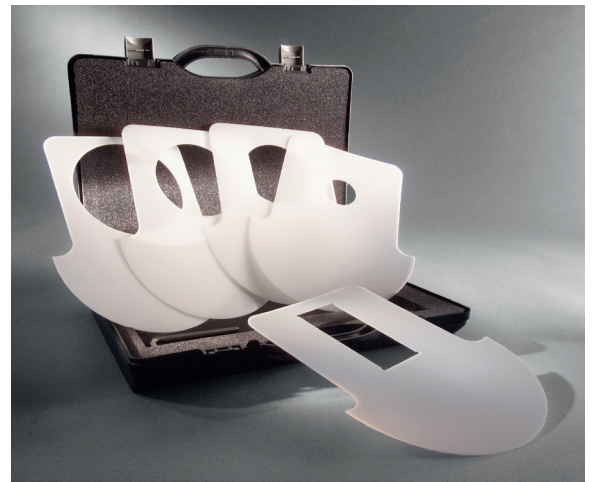
L&W Strip Punch provides accurate test pieces for RCT tests.



L&W Circular Cutter cuts the test pieces for FCT tests.



L&W ECT Cutter Billerud cuts accurate test pieces.



A case containing accessories for correct positioning the samples.