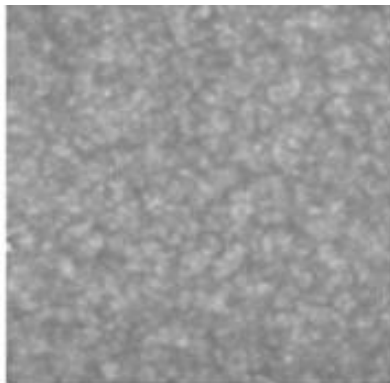


PAPER AND BOARD TESTING

- **Basis weight** – TAPPI 410, AS/NZS 1301.405, ISO 536
- **Thickness/caliper** – TAPPI 411, AS/NZS 1301.426, ISO 534
- **Moisture content** – TAPPI 412, AS/NZS 1301.457, ISO 287
- **Formation**

OpTest Paper Perfect Formation Tester measures the uniformity of paper at several floc sizes/scales of formation. It does not provide a single formation index, instead it breaks down formation into components of formation. These components of formation provide the uniformity of the paper in a particular size range/scale of formation.



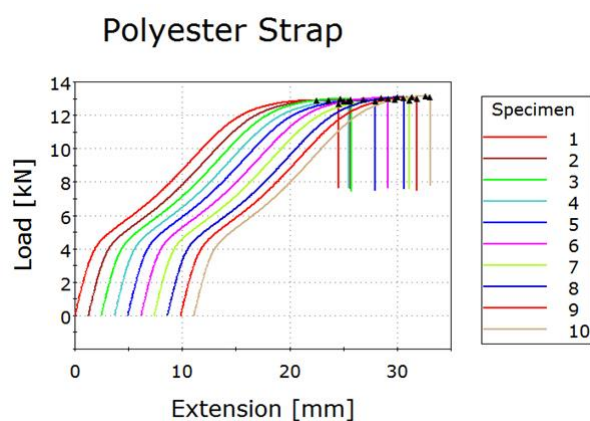
Formation results of the composite prepared from MFC.
Image taken from: Su, J, Mosse, W, Sharman, S, Batchelor, W & Garnier, G 2013, 'Effect of tethered and free microfibrillated cellulose (MFC) on the properties of paper composited', *Cellulose*, vol. 20, no 4, pp. 1925-1935.



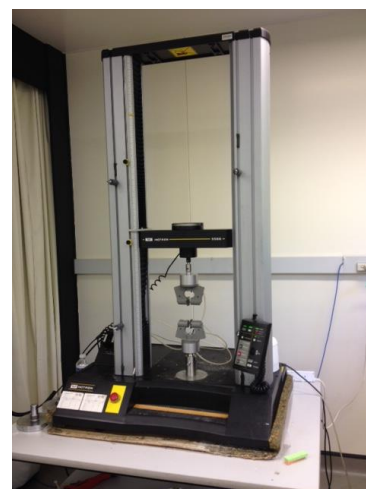
OpTest Paper Perfect Formation Analyser Code LPA03

- **Tensile strength** – TAPPI 494, AS/NZS 1301.448, ISO 1924-2

Instron instrument is designed to evaluate the mechanical properties of materials. The electromechanical testing system applies a load to a test paper via the moving crosshead. The drives system moves the crosshead up to apply a tensile load on the test specimen and down to apply a compressive load on the specimen. The units for this test results are paper strength in force units, elongation at break as a percentage from the original gauge length.



Typical results obtained from Instron instrument.
Image taken from: <http://www.instron.com/en-us/testing-solutions/by-test-type/tension/plastic-strapping-material>

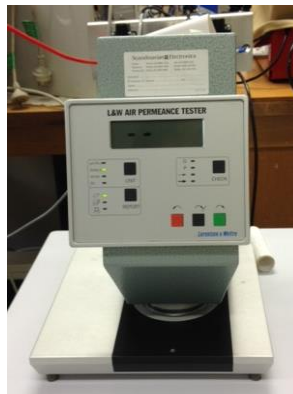


Instron Tensile Tester 5566

- **Tensile strength, 100mm/min** – ISO 1924-3
- **Tensile strength of wetted paper** – TAPPI 456, AS/NZS 1301.437

- **3 point bend tests** – ISO 5628
- **Compression test** – AS/NZS 1301.449, ISO 13820
- **Ring crush test** – TAPPI 822, AS/NZS 1301.407, ISO 12192
- **Short span compression test** – AS/NZS 1301.450, ISO 9895
- **Zero span wet tensile strength of pulp hand sheets** – TAPPI 273, AS/NZS 1301.459, ISO 15361
- **Zero span dry tensile strength of pulp hand sheets** – TAPPI 231, ISO 15361
- **Scott bond test** – TAPPI 569, ISO 16260
- **Bursting strength** – TAPPI 403 (paper), AS/NZS 1301.403 (paper), ISO 2758; TAPPI 807 (paperboard & linerboard), AS/NZS 1301.438 (board)
- **Tearing resistance, Elmendorf method** – TAPPI 414, AS/NZS 1301.400, ISO 1974
- **Roughness Parker Print Surf** – TAPPI 555, ISO 8791-4
- **Roughness Bendtsen** – AS/NZS 1301.439, ISO 8791-2
- **Air permeance Gurley** – TAPPI 460, AS/NZS 1301.420, ISO 5636-5
- **Air permeance Bendtsen** – AS/NZS 1301.440, ISO 5636-3

L&W Air permeance tester measures the porosity, air permeability of paper products. It senses the air flow through the sample and the pressure difference across the two sides. The test result can be reported in one of the following units: $\mu\text{m}^2/\text{Pas}$, Gurley seconds, ml/min (permeance according to Bendtsen, calculated on $5/10\text{cm}^2$ test area, Sheffield units).

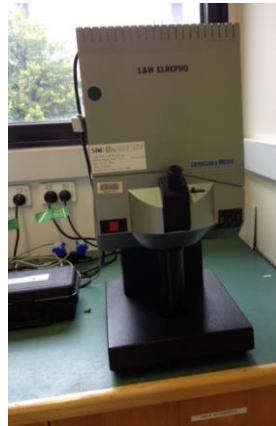


L&W Air Permeance Tester

- **Cobb test** – TAPPI 441, AS/NZS 1301.411, ISO 535
- **Water vapour transmission rate, WVTR** – TAPPI 448, AS/NZS 1301.419, ISO 9932
- **Water absorption – total immersion** – AS/NZS 1301.442, ISO 5637
- **Boiling water resistance – paperboard** – AS/NZS 1301.443
- **Edgewise crush corrugated board – unwaxed** – AS/NZS 444, ISO 3037
- **Edgewise crush corrugated board – waxed** – ISO 13821

- **Brightness, ISO** – TAPPI 525, AS/NZS 1301.462, ISO 2470-1

L&W Elrepho measures colour, brightness and opacity on paper samples. This instrument is able to give measurement according to the conditions specified by the user, D65 illuminant, C-illuminant, or a 420 nm cut-off filter.



L&W Elrepho

- **Brightness, Outdoor D65** – TAPPI 579, ISO 2470-2
- **Colour, D65/10** – AS/NZS 1301.455, ISO 5631-2
- **Colour, C/2** – TAPPI 527, ISO 5631-1
- **Colour, D50/2** – ISO 5631-3
- **Opacity** – TAPPI 519, AS/NZS 1301.454, ISO 2471

Stored/set up and configuration required

- **Tensile & ring crush creep** (Creep test rig)
- **Coefficient of friction** (IDM coefficient of friction tester) – TAPPI 549, ISO 15359
- **Gloss 75° converging** – TAPPI 480, ISO 8254-1, ISO 8254-2 also 75° but parallel beam
- **Gloss 20° converging** – TAPPI 653, ISO 8254-3