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## Carton Force Analyser

- Measure all the forces required to erect cartons
- Increase the running speed of carton packaging
- Eliminate rejections and reduce waste

# What does the CFA measure?



The Hanatek Carton Force Analyser (CFA) measures the forces that limit the running speed of folding box board packaging.

By measuring the stiffness of the substrate and crease bending resistance, the user can optimise cartons for faster running and packaging speeds. The instrument allows individual creases to be analysed identifying problem areas in packaging design or manufacture.

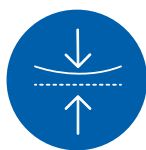
Industry research indicates that the packaging speeds of pre-glued skillets is governed by the energy required to open creases. The Hanatek CFA is the first instrument to isolate and accurately measure this key parameter.



**Bending  
Moment**



**Board  
Stiffness**



**Ratio of Crease to  
Board Stiffness**



**Crease Recovery  
Stiffness**



**Crease  
Folding Force**



**Crease  
Opening Force**



**Carton  
Opening Force**



**Relative  
Crease Strength**



**Geometrical  
Stiffness**



**Crease/Board  
Analyse**



**Folding  
Factor**

# Test types

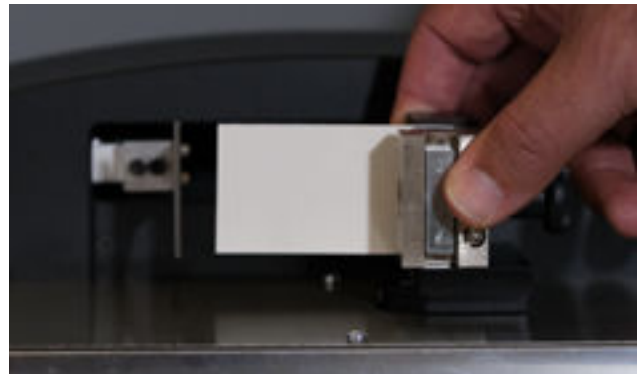
The instrument has pre-loaded test instructions that ensure samples are tested to international standards.



## Board stiffness

Measures the stiffness of the board sample to ISO 2493. The stiffness of the sample is measured twice, once with the printed side of the carton facing forward and the second time with the printed side facing to the rear.

The resultant force is displayed in N, gF or mN. The average of the two measurements is calculated as well as the Min, Max and standard deviation on a multiple sample test.



## Crease recovery stiffness

Measures the crease recovery to BS 6965. During the test, the Instrument will fold the crease under test through the preselected crease angle and hold it there for a pre-determined number of seconds. It will then measure the force exerted on the crease as the instrument rotates the sample throughout the desired test angle.

The peak force is displayed as well as the angle that this force was reached. The resultant force is displayed in N, gF or mN. The average measurement is calculated as well as the Min, Max and standard deviation on a multiple sample test.



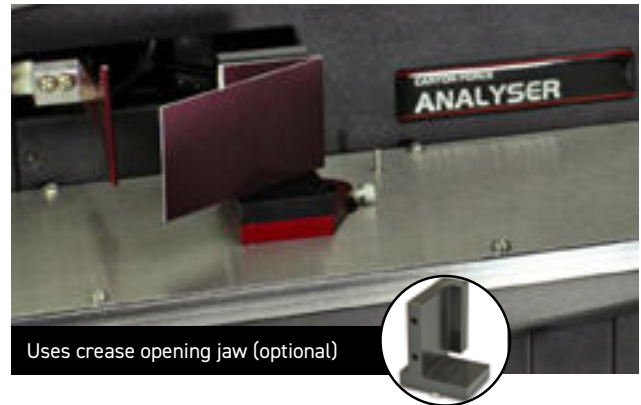
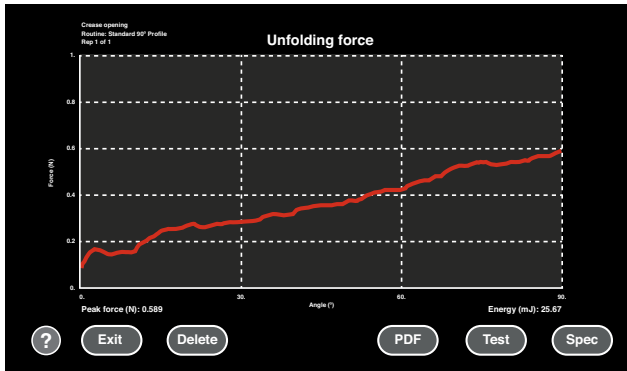
**Rounded corner crease resistance:** Rounded corner creases can be tested on the CFA (requires additional jaw).



## Crease opening force

During the test the Instrument will un-fold the crease under test through the preselected angle. The resultant force is displayed real time on the screen as the sample is rotated through the preselected test angle.

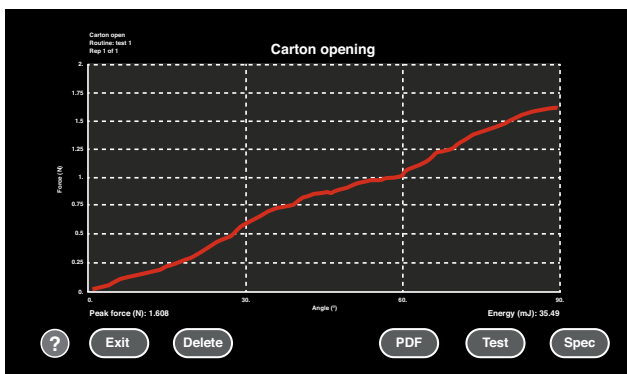
At the end of the test the resultant peak force is displayed in N as well as the energy in mJ required to bend the sample.



## Carton opening force

This test will record the forces involved in erecting a skilet into an open carton simulating the process during machine opening. This test also allows the user to identify cartons that will not run smoothly due to a poor ratio of crease to board stiffness.

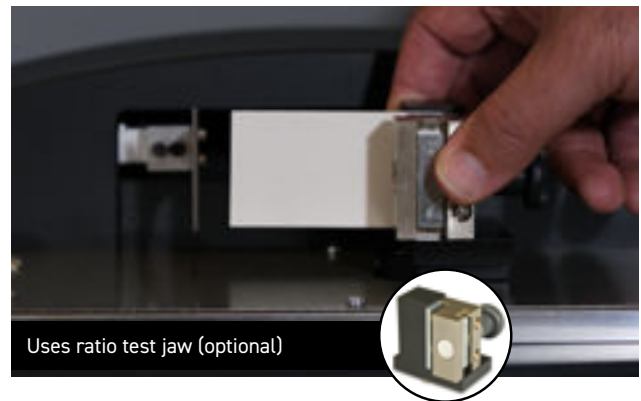
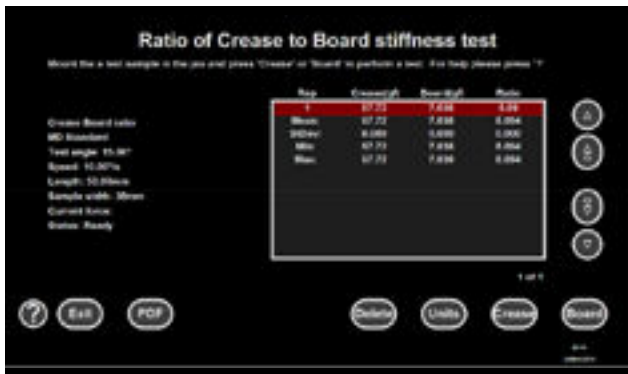
The resultant force is displayed real time on the screen as the sample is rotated through the preselected test angle. At the end of the test the resultant maximum crease stiffness is displayed in N as well as the energy in mJ required to bend the sample.





### Ratio of Crease to board stiffness

The relationship between board stiffness and crease stiffness is an important factor in the running performance of cartons. This test will allow the user to quickly calculate the crease to board stiffness ratio by measuring both crease stiffness and board stiffness to the relevant standards. The Min, Max and standard deviation is also calculated on a multiple sample test.



### Folding factor

Measure the uncreased sample and the creased sample. Calculate the ratio between samples and the 'work done' in mJ using the force vs rotation information.



### Rotation speed

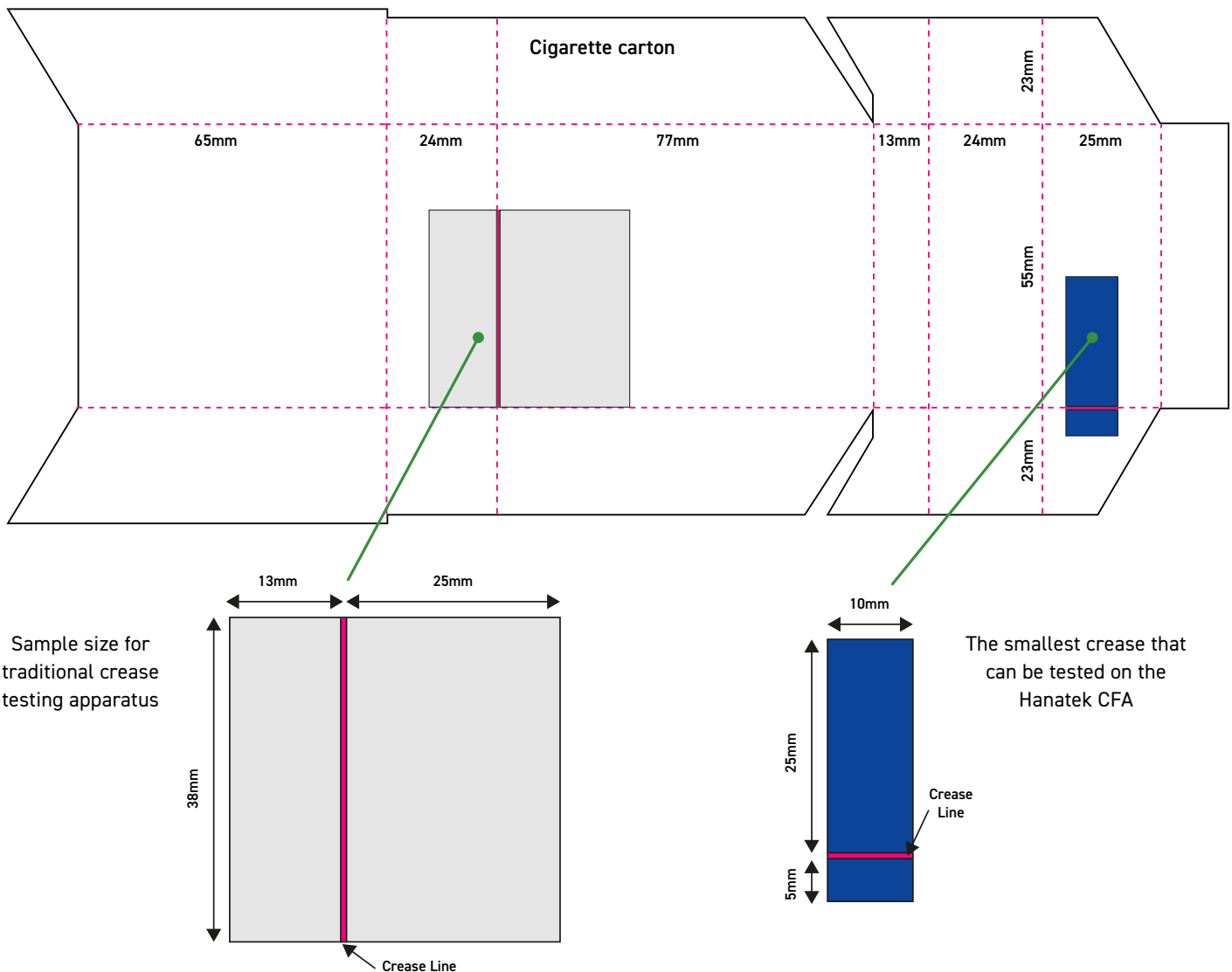
Automatic, user selectable speed of rotation. This removes errors associated with manual rotation.



# Flexible testing

## Choice of sample sizes

The CFA enables the smallest of creases to be analysed.

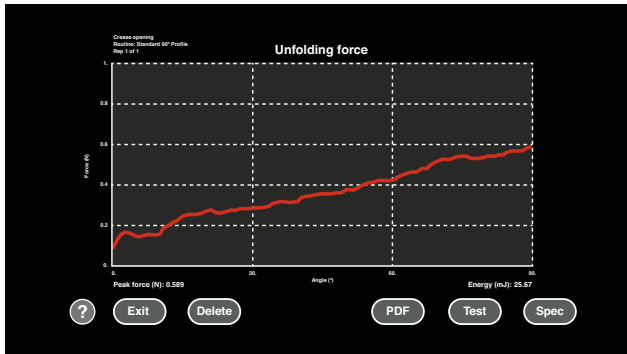


## Benefits of using The Hanatek CFA

- ✓ Faster packaging times can offer significant cost reductions for manufacturers and suppliers
- ✓ Reduced waste material; due to fewer misfeeds and failures
- ✓ Used by carton producers, converters and printers
- ✓ Can be used for Quality Assurance or as a research tool
- ✓ Packaging materials which demonstrate consistent high running speeds can offer competitive advantages to the carton manufacturer

# Results

This flexible instrument can be configured for quality or research use. All operations and test methods have comprehensive graphical on-screen help.



## Live results as they happen

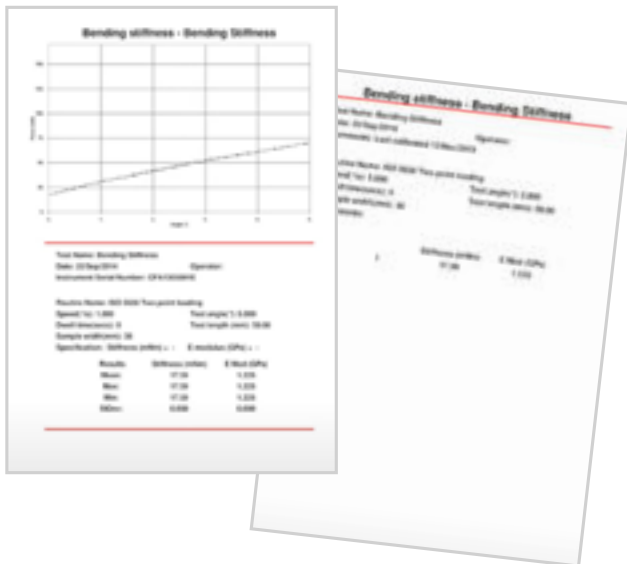
Real time graphs detail the process of folding, showing increased crease resistance until board fibres break and the crease relaxes.

The CFA allows these fingerprints to be saved and overlaid, a powerful tool that allows detailed comparison of different crease formats, substrates and manufactured batches.

## Data transfer

Tests performed on the Carton Force Analyser can be easily output to PDF for simple reporting and data storage. PDF files show full graphic information, test statistics as well as individual test results. In addition, full details of the forces detected by the load cell can be output to a .csv file (selected tests only).

The instrument can be added to a company network to facilitate simple data sharing and regular data back-up (requires operating system upgrade).



## Quality Assessment

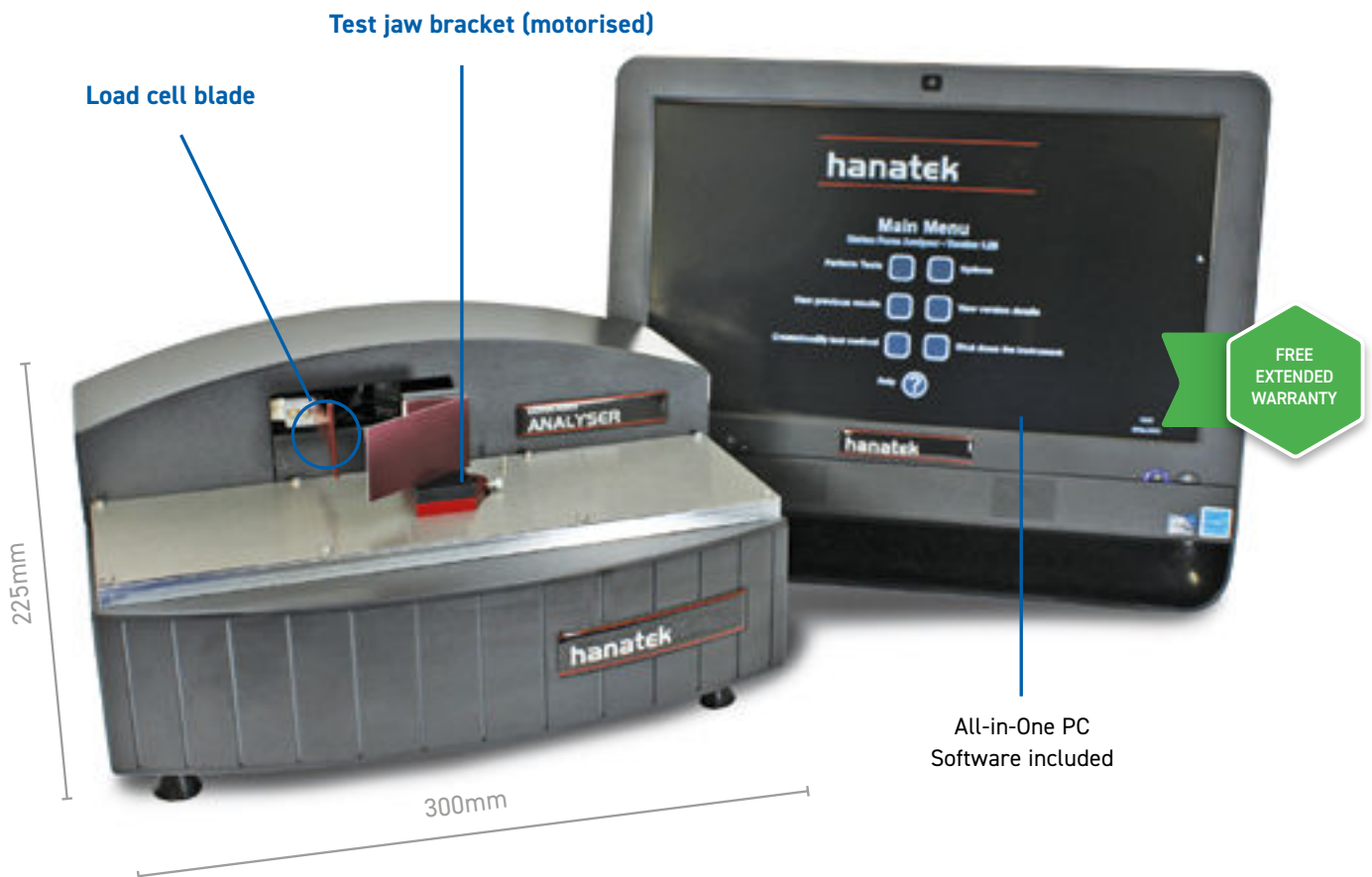
- Pre-loaded ISO/BS/TAPPI test methods
- Date/operator stamped results
- Pre-set pass/fail criteria
- Optional password protection

## Research tool

- Create and save bespoke test methods
- Variable sample length, rotation speed and crease angle
- Statistical and graphical analysis of results

# Features

This flexible instrument can be configured for quality or research use. All operations and test methods have comprehensive graphical on-screen help.



### Intuitive and easy to use

No need to consult complicated manuals and easy training for new users



### Consistent results for all operators

Motorised jaw for repeatable and accurate speed control



### Graphical trend analysis

Accurate and easy to analyse results

**Free extended 2 year warranty:** Requires registration at [www.rhopointinstruments.com](http://www.rhopointinstruments.com) within 28 days of purchase. Without registration, 1 year standard warranty applies.

**Calibration and service:** Fast and economical service via our global network of accredited calibration and service centres. Please visit [www.rhopointinstruments.com](http://www.rhopointinstruments.com) for detailed information.



# Accessories

## Included Accessories:



All-in-One PC with software and connection cables



Traceable calibration certificate



1. Jaw Holder 2. Spanner  
3. Sample preparation Templates 4. USB Stick

## Included Test Jaws:



Carton opening force jaw



Board stiffness jaw



Crease stiffness jaw



Crease opening force jaw

## Optional Test Jaws:



Rounded corner creases jaw



Ratio test jaw

## Associated product: Universal Sample Cutter

## Associated product: Carton Crease Proofer



The Universal Sample cutter allows for crease and stiffness samples to be cut simultaneously for a given pack size. Ideal for high volume testing.



Prepares individual crease and stiffness samples. Suitable for low-medium volume testing.

# Specifications

Standard	Application	Details
ISO 2493	Paper and board	Determination of resistance to bending (Lorentzen & Wettre/Taber)
ISO 5628	Paper and board	Determination of bending stiffness by static methods
TAPPI T 556	Bending resistance of paper and paperboard	Lorentzen & Wettre/Taber Tester
T 543	Bending resistance of paper (Gurley-type tester)	Calculated results equivalent to this method
T 489	Bending resistance (stiffness) of paper and paperboard	Taber-type stiffness tester in basic configuration
DIN 53121	Testing of paper and board	Determination of the bending stiffness by the beam method
BS 6965-1	Creasing properties of carton board	Method for determination of crease recovery (spring back) of 90° fold

Instrument Specifications	Resolution	Repeatability
Rotation Angle	0.01°	0.1°
Rotation Speed	0.001°/min	<0.01°/min
Load Cell	1mN	<10mN
Power	120V/230V; 50Hz/60Hz	
Load Cell Capacity	20N	
Minimum Sample Thickness	200µm	

Instrument Dimensions	
Size	220mm (H) x 225mm (W) x 300mm (D)
Net Weight	7kg (instrument), 4kg (PC)
Gross Weight	15kg

All-in-One PC Specifications	
Operating System	Windows 11
Integration	Easily integrated into laboratory network for results/backup and printing
Results	Results can also be exported to USB Stick

Item	Order code
Carton Force Analyser	HAN-A10010-CBT/A
Rounded Corner Jaw	HAN-A-CFARNDJAW
RCS / TAPPI T577 Jaw	HAN-A-TAPPIT577/RCS
Dedicated Crease and Board Sample Cutter	HAN-B9100SAMPLE
Universal Sample Cutter with custom pack size die	RL-H-CUTTER/CUSTOM-4 +RL-B80-001
Carton Crease Proofer	HAN-A9040CREASER



**TRY BEFORE YOU BUY**

## We offer two options for you to try out the Carton Force Analyser before buying

- 1 Online demonstration:** Online presentation of the Carton Force Analyser with your samples measured LIVE on Zoom, Microsoft Teams or Skype. Includes a consultation with an application specialist
- 2 Factory sample testing:** Send in samples of your material for testing and receive a comprehensive test report

[Arrange a demo](#)

Ready to receive a quote?

[Click here](#)

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