



Four Point Bending Stiffness Tester



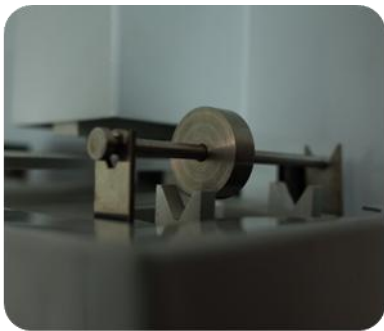
Haida International Equipment

– Paper & Package Test System

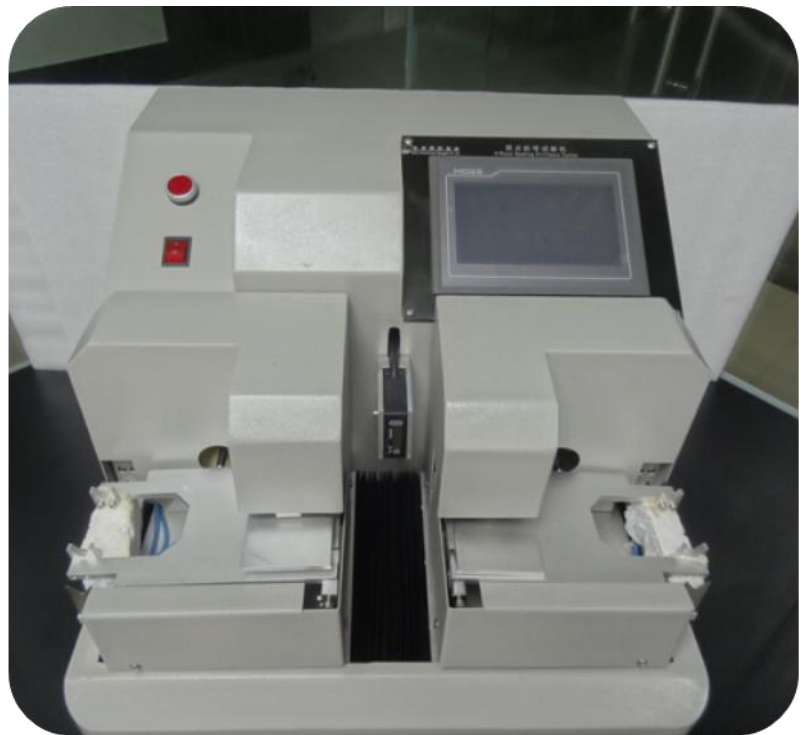
Don't guess before you test

Haida Test Equipments ...

4-Point Bending Stiffness Tester measures the bending stiffness of corrugated board and heavy paperboard rapidly and accurately. The unique design of the pneumatic clamps permits measurements of warped and twisted samples without impairing results.



The standard accessories: weight.



Applicable Standards	DIN 53 121, ISO 5628, SCAN P65, TAPPI T820, TAPPI T836
Statistics	Mean Value, Standard Deviation, Coefficient of variation, max and min values of the series, MD/CD ratio, Geometrical mean of MD and CD
Test piece	The sample size depends on board type, normally 50–100 mm (2–4 in) wide and bending length at least 120 mm (4.7 in) longer than chosen bending length. Maximum thickness is 16 mm (0.6 in)
Fixture	Pneumatic clamping effectively eliminates any problems with twisted and curled test pieces
Control Method	PLC control
Result Output	USB Flash Drive – Print Out the Image File Tabular or graphical presentation of result
Connection	USB interface (Optional)
Instrument	1.Bending length :50, 100, 150, 200 or 300 mm (2, 4, 6, 8 or 12 in) 2.Dear Weights:20 -1020 g(0.044-2.25lb)
Measurement	0.5–500 Nm (4.5–2770 lbf × in)
Measurement Tools	Laser Displacement Detector PS non contact device to measure the deflection of the paper board, this can eliminate any un-expected loading onto the paper board

Advantages:

1. Full automated testing sequence;
2. Pneumatic clamping effectively eliminates any problems with twisted and curled test series;
3. Recommended settings for different flute types are pre-programmed;
4. Touch screen for easily operation;
5. Tabular or graphical presentation of result.

DEFINITION

By using the relationship between curvature and deflection the bending stiffness becomes:

$$S^b = \frac{F \times a \times l^2}{w \times \delta \times 8}$$

where:

S^b = bending stiffness (Nm)

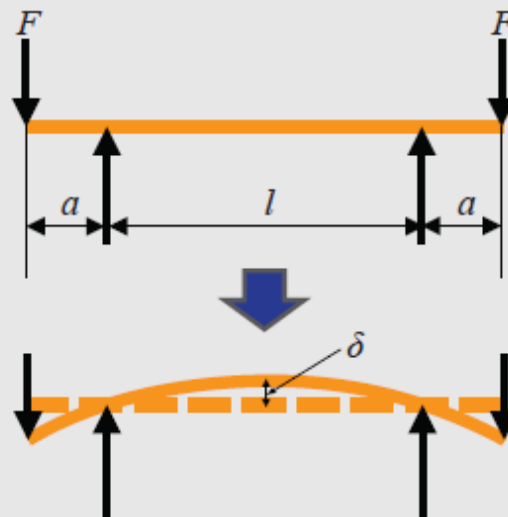
F = loading force force (N)

a = distance of the loading point from the support point (m)

l = bending length (m)

δ = maximum displacement (m)

w = width of test piece (m)



The loading principle and distribution of bending moment for the 4-point method.

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HAIDA Vision:

To be the most vitality and respectful team !

HAIDA Mission:

Become Your Lab Consultant!




Four Point Bending Result Compare Data

Test Date: 24/03/2015
 Testing Type: Shift testing
 Source: PM1

Board Type / Sample no	Result	Bending Stiffn. MD Mean	Bending Stiffn. MD Std.Dev	Bending Stiffn. MD Count	Bending Stiffn. MD Min	Bending Stiffn. MD Max	Bending Stiffn. CD Mean	Bending Stiffn. CD Std.Dev	Bending Stiffn. CD Count	Bending Stiffn. CD Min	Bending Stiffn. CD Max
B/F 26765613	ITCC Shanghai 	6.26	0.13	10	6.03	6.44	3.44	0.07	10	3.33	3.56
	Haida INTL 	6.29	0.14	10	6.03	6.45	3.46	0.04	10	3.42	3.53
	Measuring Error	0.03	0.01		0	0.01	0.02	-0.03		0.09	-0.03
	Measuring Error %	0.48%			0%	0.16%	0.58%			2.70%	-0.84%
C/F 26765332	ITCC Shanghai 	6.17	0.27	10	5.57	6.04	3.16	0.05	10	3.11	3.28
	Haida INTL 	5.93	0.17	10	5.69	6.14	3.26	0.09	10	3.13	3.5
	Measuring Error	-0.24	-0.1		0.12	0.1	0.1	0.04		0.02	0.22
	Measuring Error %	-3.89%			2.15%	1.66%	3.16%			0.64%	6.71%
BC/F 26765633	ITCC Shanghai 	74.13	4.36	10	67.79	80.65	30.28	0.52	10	29.14	30.8
	Haida INTL 	75.2	2.03	10	70.53	78.7	31.21	1.08	10	29.83	33.32
	Measuring Error	1.07	-2.33		2.74	-1.95	0.93	0.56		0.69	2.52
	Measuring Error %	1.44%			4.04%	-2.42%	3.07%			2.37%	8.18%

4 – POINT BENDING STIFFNESS TESTER (ISO-5628)

Popular Model Compare

Brand	Haida	L&W	TLS
Photo			
Applicable Standards	DIN 53 121, ISO 5628, SCAN P65, TAPPI T820, TAPPI T836	DIN 53 121, ISO 5628, SCAN P65, TAPPI T820, TAPPI T836	ISO 5628
Statistics	Mean Value, Standard Deviation, Coefficient of variation, max and min values of the series, MD/CD ratio, Geometrical mean of MD and CD	Mean Value, Standard Deviation, Coefficient of variation, max and min values of the series, MD/CD ratio, Geometrical mean of MD and CD	Min, Max, Average, Standard Deviation, Gauss Bells, Tolerances and Bars
Test piece	The sample size depends on board type, normally 50–100 mm (2–4 in) wide and bending length at least 120 mm (4.7 in) longer than chosen bending length. Maximum thickness is 16 mm (0.6 in)	The sample size depends on board type, normally 50–100 mm (2–4 in) wide and bending length at least 120 mm (4.7 in) longer than chosen bending length. Maximum thickness is 16 mm (0.6 in)	The sample size depends on board type, normally 50–100 mm (2–4 in) wide and bending length at least 120 mm (4.7 in) longer than chosen bending length. Maximum thickness is 16 mm (0.6 in)
Fixture	Pneumatic clamping effectively eliminates any problems with twisted and curled test pieces	Pneumatic clamping effectively eliminates any problems with twisted and curled test pieces	Manual Fixture
Control Method	PLC control	Touch Screen	Computer
Result Output	<ol style="list-style-type: none"> USB Flash Drive – Print Out the Image File Tabular or graphical presentation of result 	<ol style="list-style-type: none"> Thermo printer Tabular or graphical presentation of result 	<ol style="list-style-type: none"> Save-Print-Copy to Office Clipboard Real time graphic line
Connection	USB interface (Optional)	Ethernet connection	USB interface
Instrument	<ol style="list-style-type: none"> Bending length :50, 100, 150, 200 or 300 mm (2, 4, 6, 8 or 12 in) Dear Weights:20 -1020 g(0.044-2.25lb) 	<ol style="list-style-type: none"> Bending length :50, 100, 150, 200 or 300 mm (2, 4, 6, 8 or 12 in) Dear Weights:20 -1020g(0.044-2.25lb) 	<ol style="list-style-type: none"> Maximum Capacity: 500N Equipped with load cell of 50N
Measurement	0.5–500 Nm (4.5–2770 lbf × in)	0.5–500 Nm (4.5–2770 lbf × in)	50 N (Optional)
Measurement Tools	Laser Displacement Detector <i>P.S non contact device to measure the deflection of the paper board, this can eliminate any un-expected loading onto the paper board</i>	Physical Displacement Sensor	Video Displacement Sensor