

HIGH VOLUME COTTON TESTING EQUIPMENT

CONTEST-F

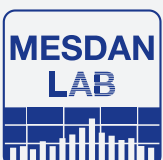


Cotton classing with integrated innovative stickiness grading

- to test all cotton classification values, such as: length, strength, elongation, micronaire, maturity, fineness, colour grade and trash;
- customer-proven 100% reliable measurement and grading of sugar stickiness ensures proper laydown selection;
- test results independent from operator influence due to highly automated operation;
- classing module is calibrated with international standard materials;
- fully automatic;
- designed, engineered and manufactured in Italy;
- testing method for stickiness grading recognised by ITMF - ICCTM.

ITMF - ICCTM
recognized

see: www.itmf.org



CONTEST-F Code 3301F

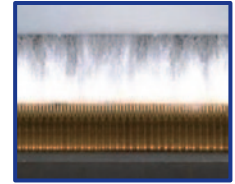


Micronaire
Fineness
Maturity

Easy and intuitive
user interface

Length
Short fibers
Strength
Elongation
Moisture
Colour grade
Leaf grade

Stickiness



Description

CONTEST-F has been developed to measure all relevant fiber data from cotton bale. The instrument consists of 2 main modules:

- the **Higher Module** measures all parameters known from the classification of raw cotton, like length, strength, elongation, short fibers, colour grade, trash, and leaf grade, as well as the cotton moisture.
- The **Lower Module** measures stickiness, micronaire, maturity and fineness.

The integration of various sensors delivers the full fiber profile, which is important for the preparation and spinning process, as well as the yarn quality and the final product.

After the sample preparation for the two modules, the measurements take place automatically, therefore test results are not affected by the operator. The sample preparation is easy and the operation of the user-interface is intuitive and simple.

The two measuring modules can be operated simultaneously as well as separately. Each sensor can be individually selected.

Overall measuring time of both modules operated simultaneously: 200 samples per 8-hour shift.

Measuring time of the **Higher Module** (length/strength/colour/trash): 150 seconds.

Measuring time of the **Lower Module** (stickiness, micronaire, maturity): 60 seconds.

Remark: all Higher Module tests are double (hence 200 samples correspond to 400 single tests).

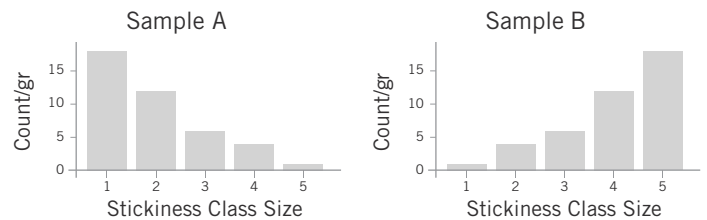
Required testing conditions: Temperature: 21°C ±1°C / 70°F ±2°F - Relative Humidity: 65% r.H. ±2%, non-condensing.

Unique feature: the stickiness risk prediction

The Stickiness Tester can detect the stickiness content affecting the spinning process, thus providing a Stickiness Risk Probability on the basis of its grade, enabling spinners to decide how to process and blend different cotton bales.

Stickiness testing time: sample preparation and testing of 6 consecutive samples: 9 minutes.

STICKINESS GRADE	SPINNING RISK PROBABILITY
0-50	No Risk
51-100	Low
101-160	Medium
161-250	High
251-500	Very High
>501	Extremely High



EXAMPLE 1	COTTON	STICKINESS CLASS SIZE					STICKINESS COUNT/GR	STICKINESS GRADE
		1	2	3	4	5		
	Sample A	18	12	6	4	2	42	86
	Sample B	2	4	6	12	18	42	166

Test Results	Description	Data / Value
HIGHER MODULE		
Colour	Optical measurement of the surface colour of a cotton sample by spectrophotometer. Results are graded according to the Nickerson-Hunter colour chart for Upland cotton.	Reflectance Rd Yellowness +b C-Grade (Colour Grade), Leaf grade
Trash	Optical measurement of the trash particles found on the surface of a cotton sample. Results are graded according to the USDA trash grades.	Trash Count Trash Area % Leaf Grade
Moisture	Resistance measurement of the cotton sample's moisture content. Sensor is located at the sampling position for the length and strength measurement.	Moisture content %
Length / Short fibers	Optical measurement of the fibers which are randomly clamped in a comb (bundle fiber measurement). All length parameters derive from the fibrogram which will be processed for analysis. These are UHML and UI. The short fibers index SFI refers to the fibers which are shorter than 1/2 inch (12.7 mm).	UHML inch/mm (Upper Half mean length) UI (Uniformity Index) SFI (Short Fiber Index)
Strength /Elongation	Physical measurement of the fiber strength by clamping and breaking the fibers at a distance of 1/8 inch (bundle fiber measurement). The applied force when pulling the fibers to the point of rupture is reported as the fiber strength. The distance at the point of break is referred to as elongation.	Strength g/tex Elongation %
LOWER MODULE		
Stickiness	Thermo-mechanical measurement of the sticky points and classification according to their size. Additionally, grading of the sample stickiness depending on amount and size of sticky points.	Total Stickiness count 1/g Stickiness point classification by size, in 5 classes (from 1 to 5) Average size of stickiness points Stickiness grade
Micronaire	Evaluation of the air permeability of the sample.	Micronaire
Maturity	Double compression air flow that measures maturity separately from the micronaire. The maturity is an indication of the cell-wall thickness of the fibers.	Maturity
Fineness	Calculation based on Maturity and micronaire.	Fineness (mtex)



NATI ADVANCED

Neps	Cnt / gr
Seed Coats	Cnt / gr
Trash	Cnt / gr
Dust	Cnt / gr

In order to complete the cotton profile on raw cotton as well as to obtain vital processing data from the sliver, the CONTEST-F can be linked to the latest version of the well known third generation of NATI - advanced version. The NATI ADVANCED (code 3280C) testing results include: Neps, Seed Coat Neps, Trash and Dust. The NATI ADVANCED data can be linked to the CONTEST-F data logger and appear together on the same screen and same printout, as per the following example.

STANDARD EQUIPMENT

- Pc with wide touch screen monitor
- Sensor to measure the ambient conditions temperature and rel. humidity
- Barcode reader
- Electronic balance: Sartorius, Model: Entris 822-1S/ (820 ± 0.01 g) or similar
- 2 cassettes for sample preparation of classing module
- 1 cassette for colour tiles
- Toolkit
- 1 compressed air tool (already installed) equipped with pipe
- 2 pcs. of calibration cottons (for micronaire testing)
- 2 pcs. of calibration cottons (for length and strength testing)

REFERENCE STANDARDS

Micronaire	ISO 2403, Determination of micronaire value
Length	ASTM D1447, Length and Length Uniformity of Cotton Fibers by Photoelectric Measurement
Strength	ASTM D1445 – 2012 Breaking Strength and Elongation of Cotton Fibers (Flat Bundle Method)
Stickiness	UNI EN 14278-3; Method using an automatic thermodetector rotating drum device
High Volume Instruments and testing	ASTM D5867, Measurement of Physical Properties of Raw Cotton by Cotton Classification Instruments

AMBIENT CONDITIONS

Ambient conditions must be maintained in order to get reproducible test results, according to ISO 139 (temperature: 20°C ±2°C / 68°F ±2°F / R.H.: 65% ±4%) and/or ASTM D1776 (temperature: 21°C ±1°C / 70°F ±2°F / R.H.: 65% ±2%).

Due to the hygroscopic nature of cotton, the samples have to be conditioned plainly in the laboratory, for at least 24 hours before testing.

For a proper way of testing for commercial use with the aim to obtain reliable and comparable test results, it is recommended to follow the Guideline for Standardized Instrument Testing of Cotton approved by the ICAC Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC) and the ITMF Instrument Committee on Cotton Testing Methods (ICCTM), available at: www.csitc.org - www.itmf.org

DIMENSIONS / POWER SUPPLY

Weight: 430 kg
Dimensions: (L) 1510 x (W) 980 x (H) 1450 mm
Power supply: 230 Vac, 50/60 Hz, single-phase, 2 kW

FIBER TESTING

Example of CONTEST-F + NATI III obtainable data



10 tests, Calibration: Universal Long Strong 34960 – Universal Short Weak 35094

Subsample	Micronaire			Length & Strength			Color			Trash			Stickiness				
	Mic g/inch	Mat Index	Fine mtek	UHML mm	UI %	SFI %	Str gr/tex	EIO %	Rd	+b	C-Grade	Tr Cnt	Tr Area %	Leaf	Sticky Cnt cnt/gr	Sticky Grade	Sticky Size mm
1	4.32	0.87	148	30.11	81.8	8.6	31.6	8.9	79.4	9.6	21.3	28	0.27	3	10	21	2.1
2	4.39	0.87	151	30.00	82.5	8.1	29.9	8.2	79.0	9.9	11.4	34	0.24	4	9	23	2.6
3	4.30	0.87	148	29.76	82.7	8.0	31.6	7.8	79.4	9.6	21.3	33	0.20	3	4	12	3
4	4.26	0.86	147	30.42	82.0	8.3	30.3	8.3	78.7	9.6	21.3	24	0.16	2	5	10	2
5	4.36	0.87	150	30.60	82.6	7.9	31.0	8.8	79.2	9.7	11.4	31	0.26	4	3	5	1.7
6	4.31	0.87	148	30.14	82.2	8.3	29.7	8.3	78.9	9.5	21.3	27	0.17	3	8	23	2.9
7	4.32	0.87	149	30.20	82.8	7.9	30.2	7.7	78.8	9.7	11.4	16	0.14	2	11	29	2.6
8	4.40	0.87	151	29.63	81.4	9.0	30.4	8.6	78.8	9.5	21.3	31	0.25	4	10	24	2.4
9	4.29	0.87	148	29.93	82.3	8.3	30.6	8.0	78.8	9.6	21.3	30	0.27	4	6	15	2.5
10	4.31	0.87	148	29.70	81.5	8.9	30.9	9.9	78.7	9.7	11.4	28	0.22	3	14	36	2.6
MEAN	4.33	0.87	149	30.05	82.2	8.3	30.6	8.4	79.0	9.64	28	0.22	3.2	8	20	2.4	
CV%	1.02	0.36	0.94	1.04	0.60	4.90	2.19	7.45	0.34	1.22	18.4	21.6	24.7	43	47	16.5	
StdDev	0.04	0.00	1	0.31	0.5	0.4	0.7	0.6	0.3	0.12	5	0.05	0.8	3	9	0.4	
Min	4.26	0.86	147	29.63	81.4	7.9	29.7	7.7	78.7	9.50	16	0.14	2	3	5	1.7	
Max	4.40	0.87	151	30.60	82.8	9.0	31.6	9.9	79.4	9.90	34	0.27	4	14	36	3.0	
Q99	0.04	0.00	1	0.28	0.4	0.4	0.6	0.6	0.2	0.10	5	0.04	0.7	3	8	0.4	



RAW
SLIVER



NATI III - advanced				
Nepps cnt/gr	Seed Coats cnt/gr	Trash cnt/gr	Dust cnt/gr	
572	11	90	359	
546	12	110	380	
539	12	100	377	
622	13	105	405	
593	11	87	380	
584	12	110	380	
605	10	82	349	
579	11	107	338	
631	15	142	408	
618	14	124	408	
589	12	106	378	
5.29	12.59	16.93	6.44	
31.1	1.5	17.9	24.4	
539	10	82	338	
631	15	142	408	
27.6	1.3	15.8	21.6	

Mesdan's stickiness testing method has received an official and full recognition by the ITMF-ICCTM in April 2020 concerning the usefulness and benefits of using the stickiness grade in spinning, trading and research purposes.

(ITMF = International Textile Manufacturers Federation, ICCTM = International Committee on Cotton Testing Methods).

ITMF - ICCTM
recognized
see: www.itmf.org

Photographs and descriptions of the present leaflet have to be considered as purely indicative and not binding



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