STICKINESS TESTER

CONTEST-S

CONTEST-S:

- fully automatic high volume testing equipment designed to detect, measure, classify and grade cotton stickiness (honeydew/sugar content);
- unique equipment providing cotton stickiness risk probability on the basis of its grade enabling spinners to anticipate proper actions (how to process & blend different cotton bales);
- ensures fast testing and very repeatable and consistent results;
- precious tool for spinning mills, cotton traders, textile institutes, R&D labs and other cotton grading, arbitration and classification institutions.

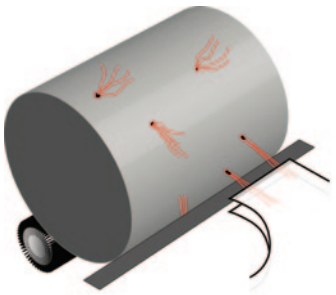
MESDAN LAB

CONTEST-S code 3304S

Stickiness tester

Introduction to cotton stickiness

Cotton stickiness phenomenon (also called “sugar” - honeydew) changes from season to season. It is caused by a large and variable source of contaminations. The most common originates from insect secretion (mainly from white-fly and aphid), or from vegetals (like oils, seed glue, crushed seeds, etc.), or from other foreign matters that stick on mechanical parts. Besides, immature fibres have a higher content of sucrose, which tends to be stickier than other vegetal sugars. Therefore it is possible to find sticky cotton crops even from origins that never had previous stickiness problems.



“Sticky cotton” bales may seriously compromise the spinning process and create lots of troubles.
If “sticky cotton” is not detected and properly handled, it can contaminate the spinning machines, increasing the production costs for excessive wear of machinery parts, for additional cleaning and maintenance operations, causing even the machinery clogging. Finally, the presence of stickiness in cotton can reduce the quality of the yarn (decreasing evenness and increasing neps content and hairiness).

The stickiness threshold issue & spinning risk probability

As experienced in spinning mills all over the world, stickiness affects both productivity and quality parameters. The establishment of thresholds for spinning sticky cotton would therefore be a great advantage to the spinning industry. However, several studies demonstrated up to now that such a critical single threshold is really unlikely to be achieved for worldwide spinning, since each mill has its own typical machinery, knowledge and economical conditions that enable different level of tolerance.

On this basis, it is therefore difficult to evaluate accurately the economic impact of stickiness on the spinning industry, as well as a determination of discounts that should be applied to sticky cottons in a rational manner.

A reasonable solution seems to be a threshold classification which should be set **by every customer** on the basis of his own experience and ability to process fibers of a given stickiness.

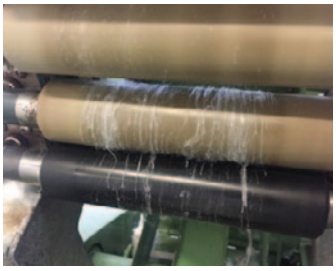
Therefore, it is important to understand that the scale given here is **only meant as an indication** and depends on various factors, which are going to be explained here below.

The grading of stickiness is based on a linear combination of the sticky counts/gr and their dimension sizes in such a way to provide a dimensionless parameter, namely **Stickiness Grade**, which is tuned to represent the probability that a decrease of efficiency may occur in spinning due to stickiness.

Different options are commonly recognized as appropriate methods to decrease the stickiness level:

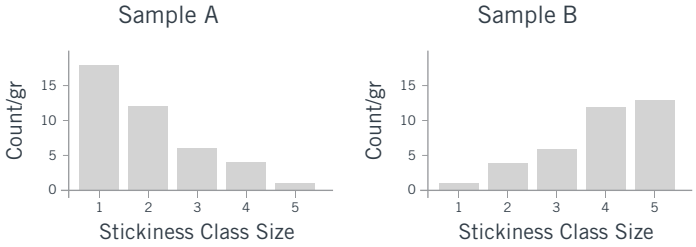
- **Adjusting the blend ratio of a sticky cotton with non-sticky cottons** in order to obtain an acceptable level of stickiness;
- **Reducing the relative humidity of the air during the spinning;**
- Possible treatment of rollers with chemicals;
- Heat lamps in combing.

To determine the proportions of blending or the deviations from the standard conditioning parameters for each type of cotton, it is essential to quantify the potential stickiness of the contaminated cotton, which depends on the Stickiness Grade (i.e. the number of sticky points contained in the cotton, as well as the size distribution of these sticky points.



CONTEST-S makes the difference in the working principle, since it provides a counting per gram of the sticky points and their sizes by simulating the carding process like in a real spinning process.

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

Measuring principles and testing method:

- Thermodetection of sticky deposits in the fibre web.
- 3.5 g / 10 m sample pressed through two 37°C heated drums revolving in opposite directions.
- Whilst no sticky fibres are sucked away, the sticky deposits adhere on the drums' surface, and are optically examined by means of a laser beam.
- Sticky points are analysed (amount and size) by the software. Subsequently sticky points are eliminated by means of two rotative brushes and a blade-mechanism, to ensure automatic cleaning of the drums' surface, in order to avoid double counting and contamination of subsequent measurements.
- Detection sensor of fibrous material at the end of the test allows to monitor and warn about unproper cleaning of the roller surface.
- The heating of the drums is achieved by a special (patented) friction system of two moveable and adjustable brushes, which permit to rapidly reach the correct starting temperature, and maintain it stable during the test, thus ensuring measurement reliability and accuracy.

The sticky deposits are counted, classified and graded by the Stickiness Tester software as follows:

- **Sticky points classes**: all deposits are divided in 5 classes by size, from 1 (small) to 5 (large), based on the voltage peak analysis.
- **Sticky points/g**: the total amount of sticky points, in total and per class, is then converted into unit / g.
- **Sticky grade**: stickiness is graded by the software giving more importance to larger than smaller deposits. Sticky grade is an important real value, which enables to immediately identify cotton stickiness, for an easier bales management.
- **Sticky points average size**.

CONTEST-S

TECHNICAL FEATURES

Stickiness	total count / g
Stickiness average size	mm
Stickiness classes	5 classes (from 1 to 5)
Stickiness grade	based on stickiness counting and classification

Software languages: English
Screen size: wide touch screen monitor
USB: Easy access to 4 USB ports
Network capability: Provided via Ethernet port
Backup: Storage of test results
Testing speed: About 30 seconds / sample

COMPRESSED AIR CONDITIONS

Air pressure	6 bar
Dirt particles air filter (size)	5 microns
Air flow (average)	40 litres/min
Inlet air quality class	3.7.4 (according to ISO 8573)

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

STANDARD EQUIPMENT

- PC with wide touch screen monitor.
- Sensors to measure the ambient conditions (temperature and relative humidity).
- n. 1 Electronic Balance (already installed) - Model: Sartorius, Entris 8221S (820 g x 0.01 g), or similar model available
- n. 1 Barcode reader (for bale ID identification).
- n. 1 compressed air Tool (already installed) equipped with pipe.
- n. 1 Toolkit.

OPTIONAL ACCESSORIES

Power Supply Transformer (from 115 Vac to 230 Vac) code 3304.110

REFERENCE STANDARDS

Stickiness: UNI EN 14278-3 (Method using an automatic thermodetection rotating drum device).

DIMENSIONS / POWER SUPPLY

Weight: 340 kg
Dimensions: (L) 1510 x (W) 960 x (H) 1410 mm
Power supply: 230 Vac, 50/60 Hz, single-phase, 2 kW

Mesdan

MESDAN S.p.A. - Via Masserino, 6
25080 Puegnago del Garda (BS) - Italy
Phone +39 0365 653142
Fax +39 0365 651011
sales@mesdan.it - **www.mesdan.com**