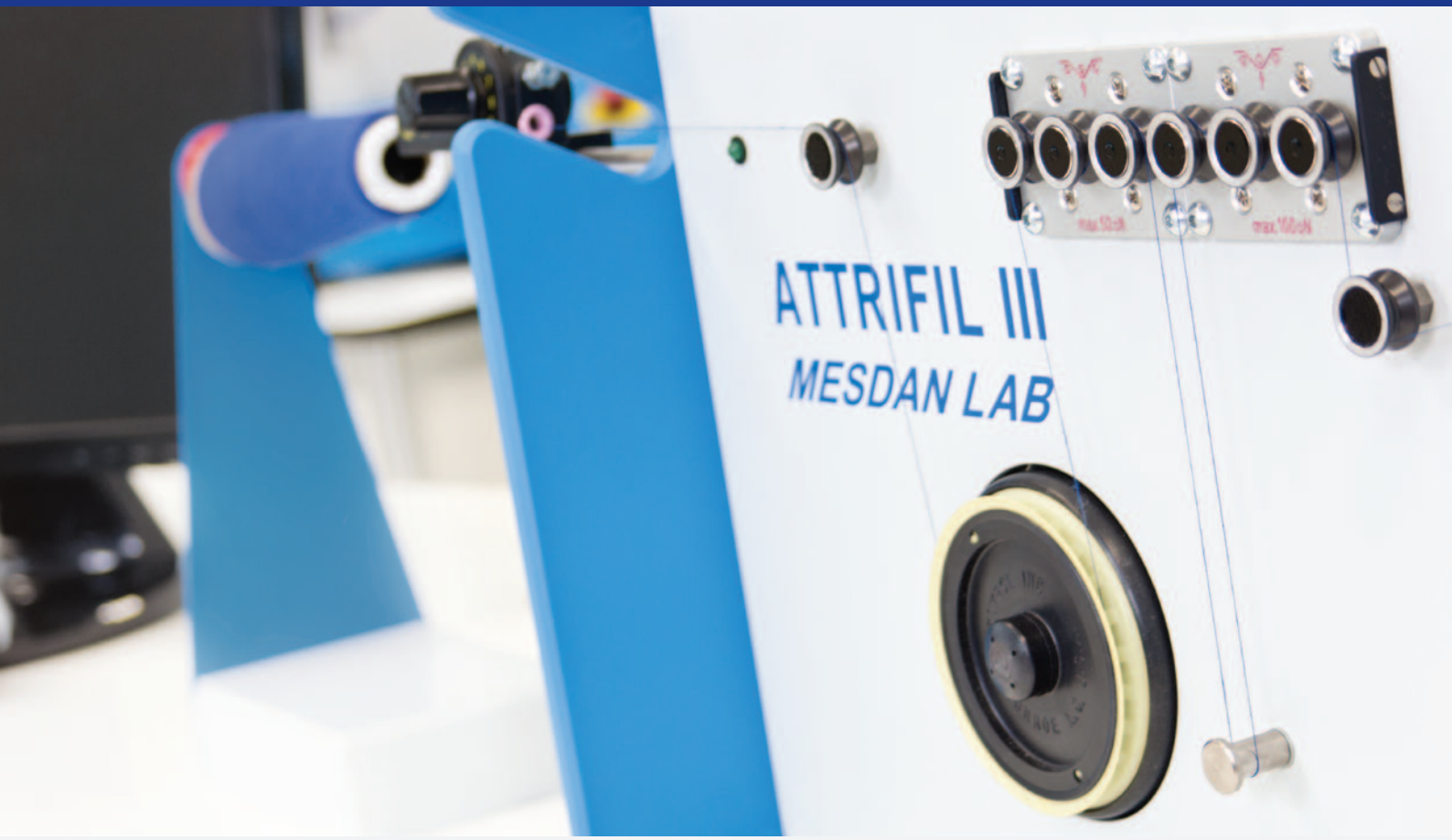
YARN FRICTION TESTER

ATTRIFIL III



Following the continuous progress of the manufacturing technology, machine's efficiency as well as quality awareness, the friction properties are recognised nowadays as one of the most important yarn quality parameter.
Thanks to its superior features, automatic functions and easy operations, the ATTRIFIL III, third generation of Mesdan-Lab yarn friction testers, became the most popular yarn friction tester on the market used by most renowned spinners, knitters, R&D labs, vocational institutions, wax & oil manufacturers, etc.

There are many factors influencing yarn friction levels and evenness such as yarn structure, count, tension, yarn deflection, wax size and type, temperature and moisture level, etc.

ATTRIFIL III is conceived to:

- optimise waxing device settings and wax pick up
- monitor the even distribution of auxiliary products on both gray and dyed yarns such as wax, oil, paraffin, sizing, etc.
- prevent lots of downstream quality problems in knitting and weaving such as barrè effect, tension variations, machine's stoppages, etc.
- ensure rapid, accurate and reproducible assessment of yarn sliding properties against metal, ceramics or else

MESDAN LAB

ATTRIFIL III Code 233C

Perfect waxed is half knitted!

Functioning principle

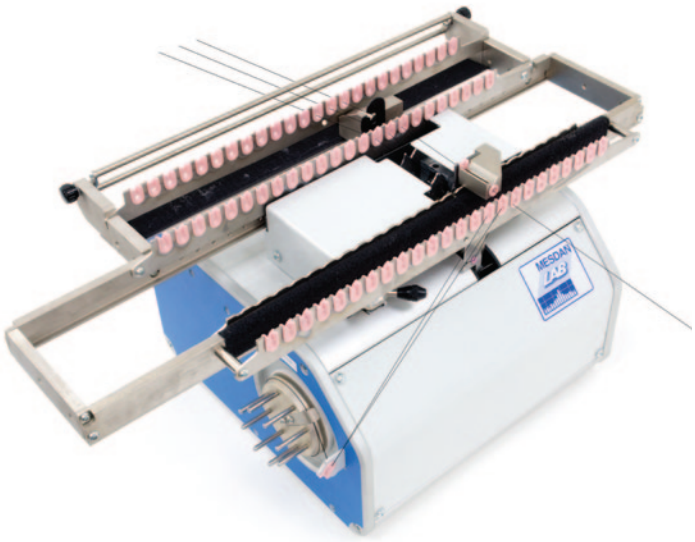
In compliance with ASTM D3108 norm, the yarn subject to a constant input tension automatically adjusted by software (usually 20 cN) runs at known speed on an interchangeable friction pin thus making a 180° wrapping angle.
The resultant output tension and its variation are immediately recorded.
The obtained data are instantly processed and the coefficient of friction (μ) is calculated by means of Amontons' law as it is requested by ASTM norm.

Running speed

The running speed for testing the coefficient of friction is usually set at 100 m/min., however ATTRIFIL III allows to adjust the speed from 50 m/min. up to 300 m/min. in order to reproduce the processing speed of the yarns.
The wide range of speed adjustment allows the operator to set low speeds in order to simulate the low running speeds of sewing threads, or to set higher speeds to check the running properties of particular types of yarns such as, for instance, hosiery yarns.

Automation

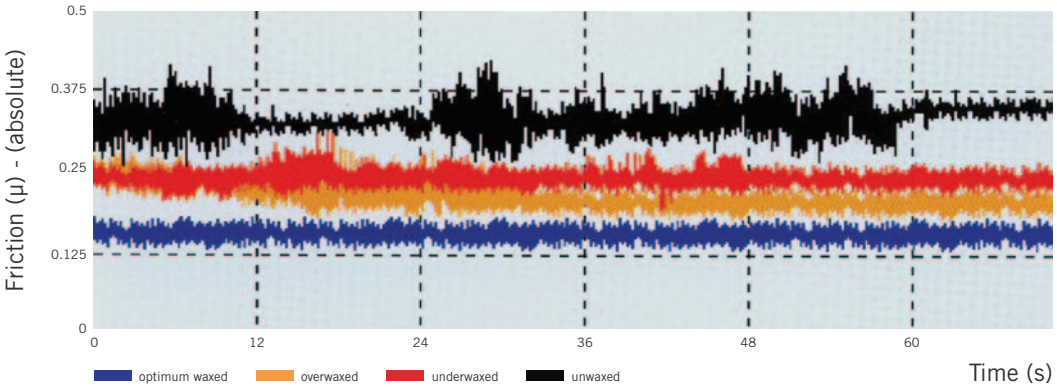
Once the operator sets the length of yarn to be tested and the distance between one test and the other, ATTRIFIL III can perform several tests automatically on the same cone (up to 999 tests!). Such automation allows to evaluate and check the quality of lubrication/waxing of the whole cone and also to control the influence of chemical additives on processing performance of the yarn in every part of the cone and not only of the outer coils, as it happens with the other instruments available on the market.



Optional

ATTRIFIL III, when used together with the exclusive **Auto Cop Changer** code 299A, is the only friction tester available on the market which automatically performs tests on different bobbins (up to 24) having the same count.

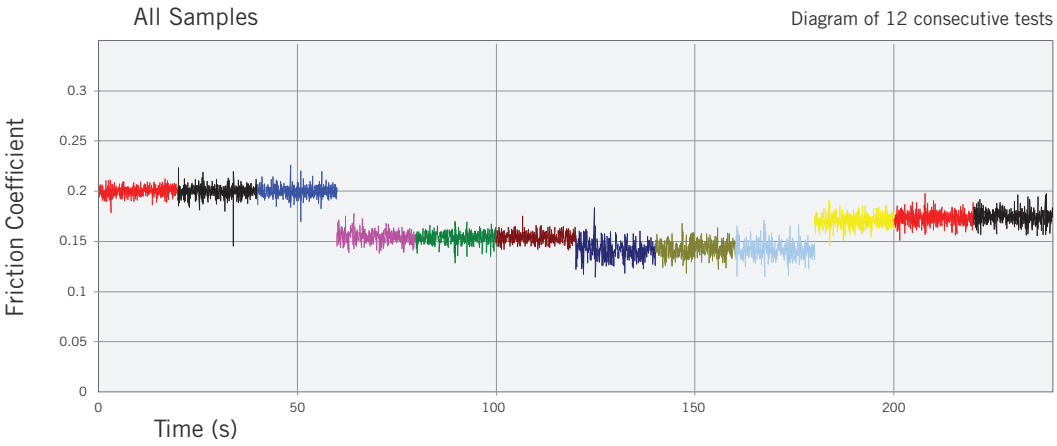
Graphic presentation of yarn friction comparison of 4 yarns analysis performed by SSM (Switzerland) with Mesdan ATTRIFIL



The measurement of coefficient of friction is carried out on a 100% cotton Ne 30 (19.7 tex) OE yarn.

Software

ATTRIFIL III is operated by an effective software running in Windows operative system of easy and immediate employ. While testing, the display of the friction coefficient diagram points out the running property of the yarn and its variation.
The following results are displayed and reported in the main print: coefficient of friction (μ), (minimum, average and maximum value), and coefficient of variation CV% of each test. The same total results are calculated on the base of the results of all tests. Every test is highlighted in different colours so that the different running properties of the yarn among the various tests are more evident.
For a careful analysis of the yarn running property it is possible to zoom in on a particular point of the diagram. In case of deterioration of the coefficient of friction (μ) the zoom helps to identify possible cyclic defects due to mechanical problems such as, for instance, in waxing application.
All data are stored in a Data Bank ready to be recalled and used.



Measuring the Friction Coefficient on MESDAN LAB ATTRIFIL III

Customer Code	MESDAN	Test Code	REP. EX	Test	Date 23/05/2017	Hour 11:28:52
Sample Descriptions	4 bobbins					
Lot		Lot			Item	
Operator					Sample Length	50,0 [m]
Number of Bobbins	4	Number of Tests each Bobbin		3	Deviation among Tests	10,0 [m]
Sliding Speed		**150,0** [m/min]			Input Tension	20,0 [cN]
Input Tension						
Test Conditions						
Remarks						

Total Results

μ	Mean	Mean CV	Minimum	Maximum
	0,1671	13,6243	0,1415	0,1999

Single Sample Results

μ	Mean	CV	Minimum	Maximum
Bobbin 1	0,1997	0,1165	0,1995	0,1999
Sample 1	0,1999	2,3215	0,1786	0,2126
Sample 2	0,1995	3,1017	0,1453	0,2234
Sample 3	0,1996	2,7825	0,1701	0,2257
Bobbin 2	0,1540	0,3146	0,1536	0,1545
Sample 1	0,1545	3,7545	0,1384	0,1774
Sample 2	0,1536	3,6990	0,1285	0,1696
Sample 3	0,1540	3,3357	0,1416	0,1748
Bobbin 3	0,1419	0,4086	0,1415	0,1426
Sample 1	0,1417	6,0717	0,1145	0,1832
Sample 2	0,1426	5,1678	0,1186	0,1679
Sample 3	0,1415	5,4337	0,1151	0,1714
Bobbin 4	0,1728	1,0864	0,1707	0,1744
Sample 1	0,1707	3,6498	0,1463	0,1902
Sample 2	0,1731	3,6058	0,1512	0,1972
Sample 3	0,1744	3,8099	0,1560	0,1977

Example of print-out of single and total results and relating statistics

ATTRIFIL III

DESCRIPTION

Electronic instrument for measuring the coefficient of friction [μ] in a wide variety of yarns and threads, either spun or filament. ATTRIFIL III is the only available fully automatic yarn friction tester able to perform multiple tests from the same bobbin completely automatically without operator attendance.

TECHNICAL FEATURES

- Automatic testing from a single package/bobbin up to 999 tests without operator attendance
- Possibility to connect to the **Auto Cop Changer (ACC)**, code 299A, to perform automatically tests on 24 bobbins/yarn packages
- Pre-selection of the yarn length to be measured
- Pre-selection of yarn length between two consecutive measurements or random testing
- All PC controlled functions
- Software for Windows O.S. (PC and printer supplied on request) complete with Data Bank
- High precision electronic tension-meters to monitor the incoming (T1) and outgoing (T2) yarn tension
- Automatically adjustable incoming yarn pretension up to 50 cN
- Adjustable yarn speed from 50 to 300 m/min
- Automatic silent sucking device
- Gradual increase of rollers' speed
- Coefficient of friction (μ) and CV% automatically calculated for each single bobbin and a group of tests
- Complying with EC safety regulations

INCLUDED ACCESSORIES

- Software for Windows O.S. complete with Data Bank
- Bobbin holder
- Threading hook to insert easily yarn through the pre-tensioning device

OPTIONAL / ACCESSORIES

Auto Cop Changer (ACC), enabling to test automatically 24 bobbins/yarn packages	code	299A
Creel for bobbins (24 positions), to be used along the Auto Cop Changer (ACC)	code	201
Calibration Report	code	233B.CC1

CONTROL LAB

· **personal computer**	code	237.92
· **monitor**	code	250.300
· **ink jet printer**	code	250.4
· **UPS (uninterruptible power source)**	code	2341.900

REFERENCE STANDARDS

Built in accordance with ASTM D3108 standard

DIMENSIONS / POWER SUPPLY

Weight: 30 kg
Dimensions: (L) 470 (W) 330 (H) 310 mm
Power supply: 115 or 230 Vac, 50/60 Hz, single-phase
Air supply: 6 bar

MESDAN

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