

ICA Bremen Cotton Round Test 2020-1

in Cooperation with Bremer Baumwollboerse
carried out by Bremen Fibre Institute (FIBRE)



ICA Bremen
The Global Centre for Cotton Testing and Research

Bremen, 2020-08-15

Evaluation of the Test Results 2020 / 1

Tested Cotton:
Cotton Number:

Egypt Giza 86
RM 42

Number of Laboratories: **82**

Argentina	1	Mauritius	-
Australia	-	Pakistan	2
Bangladesh	-	Poland	-
Brazil	1	Senegal	-
China	20	Serbia	1
Czech Republic	3	Slovenia	2
Egypt	-	South Africa	-
Germany	9	Spain	5
Greece	9	Sudan	-
India	15	Switzerland	2
Indonesia	1	Taiwan	-
Israel	1	Tanzania	-
Italy	1	Thailand	1
Japan	1	Tunisia	-
Kazakhstan	-	Turkey	5
Korea	1	Uganda	-
Mali	-	United States	-
		Uzbekistan	-
		Vietnam	1

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Managing Director: Bill Kingdon

Place of jurisdiction: Bremen

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Explanations

2020-1

test material

The sample material is generally unprocessed cotton lint without additional homogenisation from varying origins with a wide spectrum of properties. The Bremen Fibre Institute (FIBRE) usually avoids origins with high result variations.

In this Round Test the cotton is: **Egypt Giza 89 (RM 42)**

The variation of the utilized cotton was measured at the Bremen Fibre Institute (FIBRE) with an Uster HVI 1000 with 10 tests on samples from 10 different layers with the following results:

HVI HVICCS	SD between bale layers (based on 10 tests per layer)	SD between single tests (based on 10 times 10 tests)
Mic	0.097	0.082
Strength, g/tex	0.436	1,844
Length, UHM, inch	0.007	0.023
Length, UHM, mm	0.170	0.571

The test material is not suitable as a reference for calibration.

result evaluation

The results of the participating laboratories for one test method and one parameter are grouped in one table implying that the used instruments yield comparable results despite different instrument types or different national standard test methods. The results are partitioned in different tables as soon as significant differences appear.

Based on the compilation of the results, an identification of outliers is carried out, which is according to Grubbs' Test for Outliers described in ISO 5725 with one slight modification: the algorithm is applied repeatedly to ensure that all outliers are excluded.

All outliers are marked by putting brackets behind the results ["0"].

The statistical parameters for all tables and characteristics are calculated after the exclusion of outliers. For the usage of the statistical data, the different numbers of repetitions in each lab have to be considered.

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assessment of the laboratory performance

From the results, the bias of each laboratory can be calculated. Stability and repeatability cannot be assessed. The ICA Bremen Cotton Round Test does not include any benchmarking or rating of the laboratories and their results. Rather the results can be used by each laboratory to evaluate its own performance.

- For estimating a bias to results of other laboratories, please calculate the difference between your result and either the average or the median of all laboratories (after exclusion of outliers).
- For evaluating the bias, the z-score calculation may be applied:

$$z = \frac{\text{your value} - \text{average (or median)}}{\text{StdDev}}$$

- If the z-score is between -1 and 1 your lab belongs to the better 68% of all labs and no measures are necessary. In the z-score range of -2 to 2 are 95 % of all values. The closer your z-score is to 2 (-2) the more urgently it is to take measures to improve performance. If your z-score is above 2 (below -2) a basic revision of all conditions will be necessary.
- For assessing permanent deviations, please monitor all deviations in subsequent ICA Bremen Round Tests or in comparison to other round trial programmes like the CSITC Round Trials or the USDA HVI Checktest.

laboratory numbers

The laboratory numbers for each laboratory are confident. The numbers are usually kept constant for subsequent Round Tests. In case that any laboratory has doubts in the anonymity of its number, a new laboratory number should be requested.

In case of more than one instruments of the same type, an adjunct number or character is given (e.g. 123-1 and 123-2). In order to distinguish between your instruments, please provide specific adjunct characters for each of your instruments with your data sheet.

registration and participation

To register a new laboratory to the ICA Bremen Round Test, please send the laboratory's contact details to Mrs Hannelore Gerardi – contact details provided below. In the case that a laboratory does not send any results back for a whole year's period, we have to exclude it from the participants.

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choice of test methods included in the round test

The ICA Bremen Round Test strives to include every commonly used test method.

- Test methods will remain included as long as sufficient participant numbers are given, although the Bremen Fibre Institute (FIBRE) maintains the right to exclude methods.
- Proposals for the inclusion of new methods/instruments/parameters are appreciated. For this, an adequate number of long term participants should be given.
- Test methods for stickiness are excluded due to difficulties in sample provision.

improvement of the ica bremen cotton round test

Any proposals for improving the Round Test are highly appreciated. For this, please contact Mr Axel Drieling – contact details provided below.

important notes

Please take care to fill in all the necessary information on the test forms (e.g. the test methods, the instrument types and the number of repetitions for each test). Please provide one or two reliable e-mail addresses to Mrs Gerardi - contact details are provided in the last section.

Contact

For any questions regarding the ICA Bremen Cotton Round Test, please contact:

- Mr Axel Drieling for general questions relating to the Round Test and cotton testing, Tel. +49 421 218 58650, e-mail: axel@ica-bremen.org
- Mrs Hannelore Gerardi for questions relating to the realization of the current tests, Tel. +49 421 218 58671, e-mail: gerardi@faserinstitut.de

With kind regards,
Axel Drieling and Hannelore Gerardi

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Micronaire (Stand Alone Instruments)

	Micronaire (Mic)	Instrument	Standard Test Method	Repetitions
Average	4.61			
Median	4.6			
Stddev	0.22			
CV	4.7			
Min	4.29			
Max	5.1			
n	19			
Laboratory	Micronaire (Mic)	Instrument	Standard Test Method	Repetitions
12-1	4.5	Uster LVI975	GB/T 6498-2008	3
16-1	4.54	WIRA GW 20808	UNE 40214	6
17-1	4.6			
28-1	5.1	MICRONAIRE	ASTM-D1448	5
29-1	4.8		ISO 2403	4
32-1	4.67	WIRA		6
32-2	4.29	WIRA		6
56-1	4.6	Fibronaire	JIS	2
67-1	4.55	Fibronaire		6
76-1	4.66	Wira		4
77-1	5.1			
129-1	4.48	SHEFFIELD	ASTM 5867	10
132-1	4.4	Uster 775	DIN 53941	3
142-1	4.7	80 400	ISO	3
155-1	4.5	275 Typ C		
162-1	4.6	SDL		6
169-1	4.3	Sheffield Micronaire		3
177-1	4.72	DPM 60	DIN 53941	3
186-1	4.45	WIRA	ASTM	6

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Pressley - Strength

	PI (0)	Standard Test Method	Repetitions
Average	9.42		
Median	10.0		6.0
Stddev			
CV			
Min	8.41		
Max	10.11		
n	5		
Laboratory	PI (0)	Standard Test Method	Repetitions
16-1	8.47	UNE 40247	6
29-1	10.1	ISO 3060	10
56-1	10.0	JIS	5
162-1	10.11		6
177-1	8.41	DIN 53942	3

Stelometer - Strength/Elongation

	Bundle Strength (gf/tex)	Bundle Elongation (%)	Standard Test Method	Repetitions
Average				
Median				
Stddev				
CV				
Min				
Max				
n				
Laboratory	Bundle Strength (gf/tex)	Bundle Elongation (%)	Standard Test Method	Repetitions
162-1	27.2	6.2		6
193-1	32.9	7.2	GB/T 13783-1992	6

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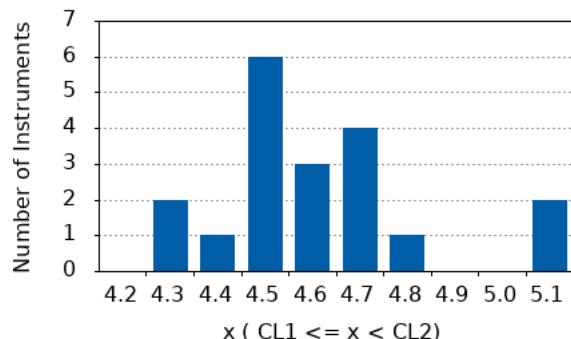
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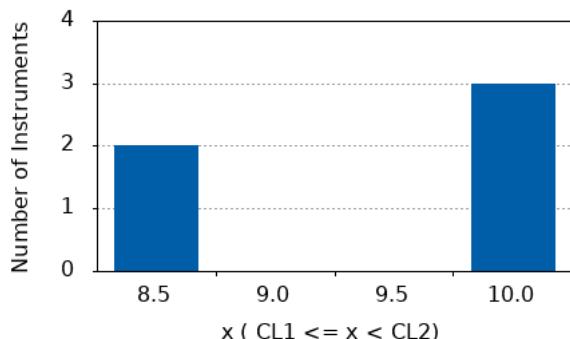


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Micronaire (Stand Alone Instruments)



Pressley (0)



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Fibrograph - Span Length

	2.5% SL (inch)	2.5% SL (mm)	50% SL (inch)	50%SL (mm)	UR (%)	SFC(N) (%)	SFC(W) (%)	SFI	Instrument Model	Standard Test Method	Repeti- tions
Average											
Median											
Stddev											
CV											
Min											
Max											
n											
Laborator	2.5% SL (inch)	2.5% SL (mm)	50% SL (inch)	50%SL (mm)	UR (%)	SFC(N) (%)	SFC(W) (%)	SFI	Instrument Model	Standard Test Method	Repeti- tions
28-1	1.161	29.49	0.315	8.0	50.0		9.8		FIBROGRAPH	ASTM-D1447	5

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Comb Sorter - Staple Length

	ML(W) (mm)	CV (%)	SFC < 12.5mm (%)	Instrument Model	Standard Test Method	Repetitions
Average						
Median						
Stddev						
CV						
Min	28.2	24.2	3.0			
Max	29.2	26.4	6.0			
n	3	3	3			
Laboratory	ML(W) (mm)	CV (%)	SFC < 12.5mm (%)	Instrument Model	Standard Test Method	Repetitions
85-1	28.2	26.4	5.0	Keisokki	UNI 10170	1
85-2	29.2	24.2	3.0	Keisokki	UNI 10170	1
85-3	28.3	26.1	6.0	Zweigle	UNI 10170	1

Almeter - Staple Length

	ML(N) (mm)	CV(N) (%)	SFC(N) <12.5mm (%)	ML(W) (mm)	CV(W) (%)	SFC(W) <12.5mm (%)	Instrument Model	Standard Test Method	Repetitions
Average									
Median									
Stddev									
CV									
Min									
Max									
n									
Laboratory	ML(N) (mm)	CV(N) (%)	SFC(N) <12.5mm (%)	ML(W) (mm)	CV(W) (%)	SFC(W) <12.5mm (%)	Instrument Model	Standard Test Method	Repetitions
58-1	22.4	41.0	19.4	26.1	33.8	8.6	AL 101	Internal	3
132-1	25.1	32.99	10.36	28.95	26.55	3.5	Uster AL100	DIN 53806	5

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Causticaire (18% NaOH) - Maturity

	Maturity (%)	Instrument Model	Standard Test Method	Repetitions
Average				
Median				
Stddev				
CV				
Min				
Max				
n				
Laboratory	Maturity (%)	Instrument Model	Standard Test Method	Repetitions
56-1	86.0	Micronaire	JIS	2
129-1	81.0	Projection Microscope	IS-236	4

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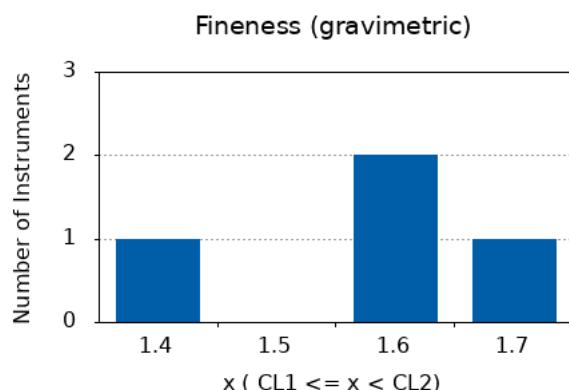
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Gravimetric Fineness

	Grav. Fineness (dtex)	Std. Test Method	Repetitions
Average	1.59		
Median	1.615		
Stddev			10.0
CV			
Min	1.43		
Max	1.7		
n	4		
Laboratory	Grav. Fineness (dtex)	Std. Test Method	Repetitions
85-1	1.62	UNI EN ISO 1973	10
85-2	1.7	UNI EN ISO 1973	10
85-3	1.61	UNI EN ISO 1973	10
177-1	1.43	ASTM D 1577/90	3



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IIC/Shirley FMT - Fineness/Maturity

	PM (%)	MAT	FIN (m tex)	Instrument Model	Standard Test Method	Repetitions
Average	71.9	0.78	216			
Median	73.5	0.79	206.5			6.0
Stddev						
CV						
Min	60.18	0.64	179.0			
Max	80.25	0.9	270.0			
n	4	4	4			
Laboratory	PM (%)	MAT	FIN (m tex)	Instrument Model	Standard Test Method	Repetitions
28-1	75.3	0.8	201.0	FMT	ISO 10306	5
32-1	60.18	0.64	270.0	WIRA		6
32-2	80.25	0.9	179.0	WIRA		6
101-2	71.7	0.78	212.0	Finest Maturity Tester	ASTM-5687-2012	12

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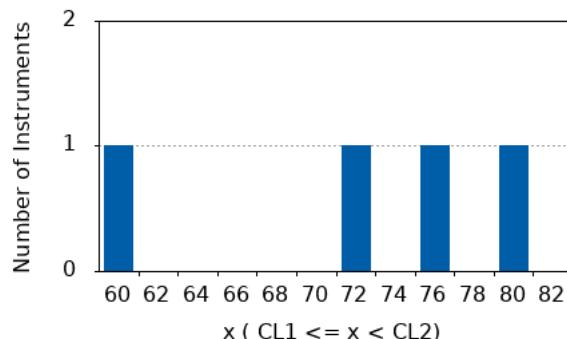
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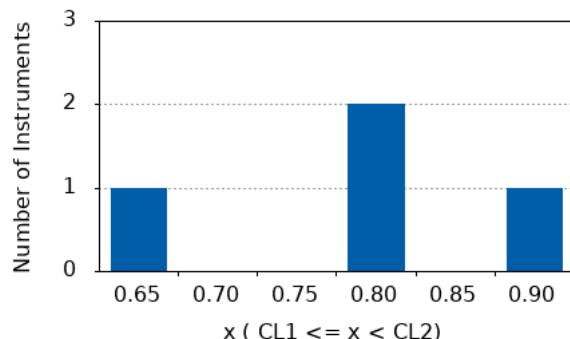


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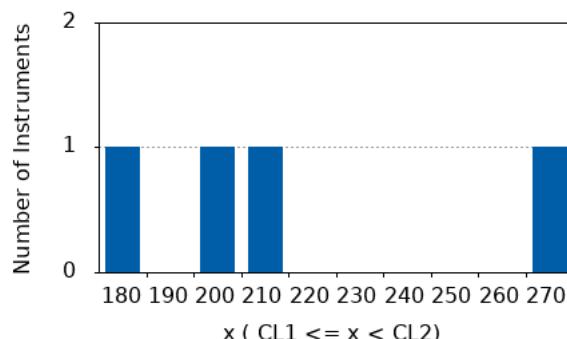
IIC/Shirley FMT - PM%



IIC/Shirley FMT - MAT



IIC/Shirley FMT - Fineness



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HVI (HVICCS Calibration): Micronaire / Strength

	Micronaire (Mic)	Mat. Index	PM% (%)	Strength (gf/tex)	Elong. (%)	Manuf.	Model	Std. Test Method	Repetitions
Average	4.62	0.885	87.3	44.05	6.02				
Median	4.62	0.88	88.0	43.9	6.1				
Stddev	0.16	0.03		3.53	1.2				
CV	3.4	3.3		8.0	19.5				
Min	4.0	0.8	75.0	29.5	2.1				
Max	5.1	0.97	88.0	52.6	12.7				
n	80	61	5	80	67				
Laboratory	Micronaire (Mic)	Mat. Index	PM% (%)	Strength (gf/tex)	Elong. (%)	Manuf.	Model	Std. Test Method	Repetitions
6-1	4.6	0.88		43.4	4.8	USTER	1000	GB/T 20392-2006	4
9-1	4.6			44.2		PREMIER	ART		4
11-1	4.66			41.1	7.2	PREMIER	ART2	USDA	10
12-1	4.61	0.95		41.5	7.1	Premier	ART 2	GB/T 20392-2006	6
18-1	4.86	0.89		47.7	5.2	USTER	1000	SYSTEM TESTING-INDIVIDUAL TESTS	20
19-1	4.6	0.88		45.4	5.3	USTER	1000	GB/T 20392-2006	
23-1	4.55	0.87		43.4	7.2	USTER	1000	D 5867	10
25-1	4.61	0.88		45.1	6.1	USTER	1000		10
26-1	4.64	0.88		44.9	5.5	USTER	1000		10
27-1	4.9	0.89		49.3	6.3	USTER	900.0	ASTM D5867-12e1	10
28-1	5.10	0.81	75.00	39.6	10.50	Textechno	HVI	ASTM-D5867	5
32-1				46.2	5.1	USTER	900		10
32-2	4.51			52.6	5.0	USTER	900		10
33-1	4.63	0.89		43.1		USTER	1000	GB/T20392	6
33-2	4.68	0.89		41.8		USTER	1000	GB/T20392	6
35-1	4.66	0.80		45.1	6.0	USTER	1000	GB/T20392-2006	2
38-1	4.74	0.88		49.5	5.1	USTER	1000	ASTM	6
39-1	4.76	0.9		30.80		Premier	ART 2		6
41-1	4.87	0.96		42.9	2.1	Uster	Spectrum		6
44-1	4.42	0.86		43.5		USTER	1000		10
44-2	4.49	0.94		43.6		Premier	ART 2		10
49-1	4.8	0.89		43.5	5.7	USTER	1000	ASTM D 1776	12
55-1	4.21	0.81		34.0	7.6	MAG	OTHER	ASTM-D:5867-12	
56-1	4.37			47.9	5.4	USTER	Spectrum □	HVI Test Method	5
58-1	4.73	0.88		44.7	6.1	USTER	1000	Internal	10
61-1	4.5			31.40	6.9	MAG	HVT Expert 1201	ASTM-5867-2005	4
61-2	4.5			31.80	5.3	USTER	900	ASTM-5867-2005	4
63-1	4.4	0.84		33.4	7.4	MAG	Other	ASTM-D-5867-12	
64-1	4.31	0.85		33.4	6.1	MAG	Other	ASTM-D1234-2012	
69-1	4.78	0.87		41.7		MAG SOLVIS PVT LTD	Other	ASTM:D-5867-12	
71-1	4.82	0.88		43.9	6.7	USTER	1000	GB/T 20392-2006	6
72-1	4.86	0.88		43.3		USTER	1000	ASTM-D1776	6
78-1	4.8		88.0	46.4	6.5	USTER	1000		6
79-1	4.78	0.9		44.2	6.3	USTER	1000	GB/T 20392-2006	2
83-1	4.62			50.3	6.0	USTER	Spectrum	GB/T 20392-2006	10
84-1	4.58		88.0	43.1	4.9	USTER	1000	USDA	12

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ICA Bremen Cotton Round Test 2020-1

in Cooperation with Bremer Baumwollboerse
carried out by Bremen Fibre Institute (FIBRE)



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	Micronaire (Mic)	Mat. Index	PM% (%)	Strength (gf/tex)	Elong. (%)	Manuf.	Model	Std. Test Method	Repetitions
86-1	4.7	0.89		45.3		USTER	1000	GB/T20392-2006	10
87-1	4.6	0.9		47.4	4.0	USTER	1000	GB/T20392-2006	6
87-2	4.6	0.9		46.7	2.2	USTER	1000	GB/T20392-2006	6
87-3	4.48	0.9		51.2	8.0	USTER	1000	GB/T20392-2006	6
90-1	4.69	0.87		47.8	8.1	USTER	1000	ASTM-D 5867	10
91-1	4.53	0.87		42.5	6.0	USTER	1000		6
94-1	4.73	0.88		45.7		USTER	1000	ASTM D 5867	6
94-2	4.66	0.88		44.6		USTER	1000	ASTM D 5867	6
96-1	4.62			41.0	6.9	Premier	HFT	GB/T 20392-2006	10
96-2	4.51			47.9	4.5	USTER	other	GB/T 20392-2006	10
96-3	4.57			44.5	7.1	Premier	HFT	GB/T 20392-2006	10
96-4	4.66			43.0	6.3	USTER	93-4(HV11000-143)	GB/T 20392-2006	10
101-1	4.74	0.88		43.7	6.1	USTER	1000	ASTM 5687-2012	24
103-1	4.71	0.86		47.3	7.4	USTER	1000	GB/T 20392-2006	10
104-1	4.62	0.87		43.9	6.3	USTER	1000	GB/T20392	4
105-1	4.69	0.88		43.9	5.4	USTER	1000	ASTM D 1776, ASTM D 5867	10
106-1	4.43			45.6	12.7 ()	USTER	900	ASTM D 5867	10
107-1	4.0 ()	0.86		29.5 ()	6.5	Premier	ART 2	ASTM :D 5867-12	
108-1	4.75	0.87		45.6	6.9	USTER	1000	ASTM D 5867-12	10
109-1	4.7	0.88		45.5		USTER	1000		10
113-1	4.42	0.86		44.5	7.4	MAG	Other	ASTM-D-5867-12	10
119-1	4.66	0.89		44.9	5.1	USTER	1000	GB/T 20392	2
121-1	4.65	0.88		45.9	6.6	USTER	1000	GB/T 20392-2006	2
123-1	4.42	0.88		41.6	7.9	Premier	ART C	ASTM D 5867-2012	10
123-2	4.57	0.87		45.4	6.6	USTER	1000	ASTM D 5867-12	10
129-1	4.49			33.5	7.2	Premier	ART 2	ASTM-5867	10
138-1	4.57	0.95		43.7	5.6	USTER	Spectrum	ASTM D 5867-2012e1	6
141-1	4.78	0.88		43.5	6.6	USTER	1000	Mode 4	1
145-1	4.75	0.93		38.5	7.3	Premier	ART 2		
148-2	4.9	0.89		41.7	4.8	Uster	1000	ASTM-D 5867	6
150-1	4.18			31.6 ()	5.9	Statex	Other	D1441 - 12	1
154-1	4.4		88.0	44.5	6.8	USTER	900	ASTM D 5867	10
162-1	4.5			42.6	5.6	USTER	900		6
175-1	5.01	0.89		47.1	6.0	USTER	1000	ASTM-D5867-12	10
179-1	4.64	0.88		46.1	4.1	USTER	1000	GB/T 20392-2006	6
186-1	4.45	0.97 ()	85.0	46.6	11.9 ()	Textechno	CCS-V5-3	ASTM	10
193-1	4.72	0.89		42.7	5.1	USTER	1000	GB/T 20392-2006	16
200-1	4.77			46.1		USTER	900	ASTM D 5867	10
204-1	4.69	0.95		42.2	5.1	USTER		GB/T 20392-2006	12
207-1	4.57	0.87		43.2	6.2	USTER	1000	ASTM D 5867-12 e1	10
207-2	4.55	0.88		42.4	5.8	USTER	1000	ASTM D 5867-12 e1	10
207-3	4.46	0.87		43.2	6.1	USTER	1000	ASTM D 5867-12 e1	10
207-4	4.5	0.87		43.7	6.6	USTER	1000	ASTM D 5867-12 e1	10
214-1	4.6	0.88				Premier	ART		30
218-1	4.64	0.95		43.5	6.1	USTER	Spectrum	D5867	10

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Managing Director: Bill Kingdon

Place of jurisdiction: Bremen

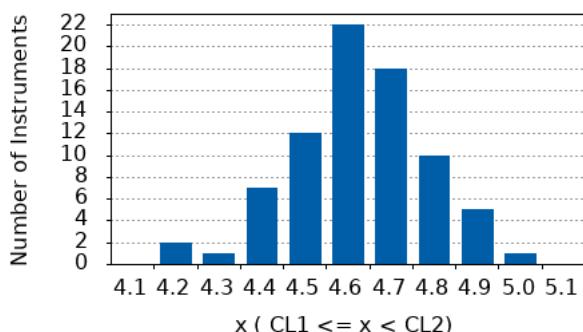
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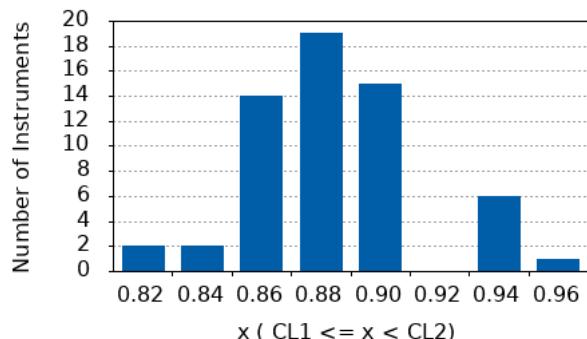


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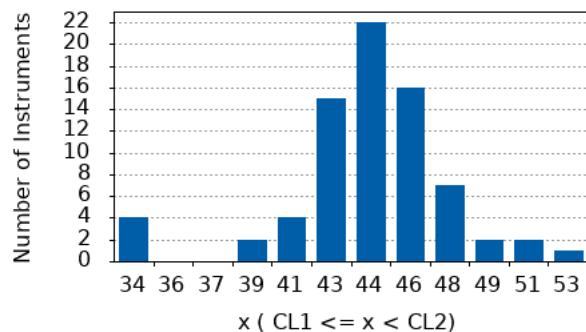
HVI (HVICCS Calibration): Micronaire



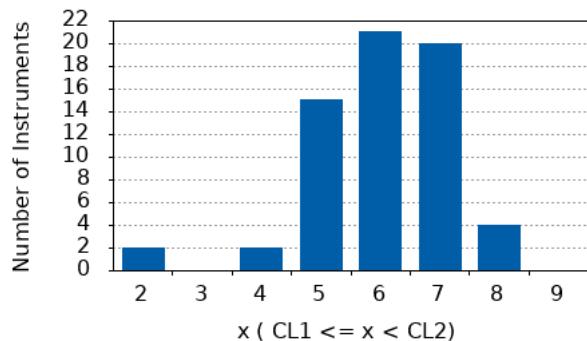
HVI (HVICCS Calibration): Mat. Ratio



HVI (HVICCS Calibration): Strength



HVI (HVICCS Calibration): Elongation



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HVI (HVICCS Calibration): Length Results

	UHML (inch)	UHML (mm)	Uniformity Index (%)	-SFI-	Manuf.	Model	Std. Test Method	Repetitions	SFI calibrated?
Average	1.289	32.74	86.19	5.94					
Median	1.289	32.74	86.3	6.0				10.0	
Stddev	0.022	0.57	1.05	1.67					
CV	1.7	1.7	1.2	28.0					
Min	1.165	29.6	78.0	2.1					
Max	1.334	33.88	88.5	14.8					
n	81	81	81	71					
Laboratory	UHML (inch)	UHML (mm)	Uniformity Index (%)	-SFI-	Manuf.	Model	Std. Test Method	Repetitions	SFI calibrated?
6-1	1.293	32.84	86.3	3.65	USTER	1000	GB/T 20392-2006	4	No
9-1	1.287	32.68	85.7	5.0	PREMIER	ART		4	No
11-1	1.285	32.65	85.5		PREMIER	ART2	USDA	10	
12-1	1.269	32.22	85.2	6.6	Premier	ART 2	GB/T 20392-2006	6	No
18-1	1.303	33.09	87.3	5.4	USTER	1000	SYSTEM TESTING-INDIVIDUAL TESTS	20	Yes
19-1	1.301	33.05	87.0	6.3	USTER	1000	GB/T 20392-2006		
23-1	1.282	32.56	87.8	2.1	USTER	1000	D 5867	10	Yes
25-1	1.309	33.24	87.4	4.2	USTER	1000		10	No
26-1	1.328	33.74	87.2	4.6	USTER	1000		10	
27-1	1.308	33.22	87.03	5.99	USTER	900.0	ASTM D5867-12e1	10	No
28-1	1.22	30.98	87.97	7.6	Textechno	HVI	ASTM-D5867	5	No
32-1	1.295	32.9	86.4	8.5	USTER	900		10	
32-2	1.311	33.3	87.2	8.7	USTER	900		10	
33-1	1.287	32.7	86.5		USTER	1000	GB/T20392	6	
33-2	1.276	32.41	86.6		USTER	1000	GB/T20392	6	
35-1	1.274	32.36	86.3	5.1	USTER	1000	GB/T20392-2006	2	No
38-1	1.334	33.88	87.1	7.0	USTER	1000	ASTM	6	No
39-1	1.254	31.86	86.1	6.8	Premier	ART 2		6	Yes
41-1	1.257	31.92	85.5	3.6	Uster	Spectrum		6	
44-1	1.313	33.35	85.5	5.0	USTER	1000		10	Yes
44-2	1.284	32.61	85.7	6.5	Premier	ART 2		10	Yes
49-1	1.288	32.72	85.6	6.0	USTER	1000	ASTM D 1776	12	No
55-1	1.256	31.9	85.8	6.8	MAG	OTHER	ASTM-D:5867-12		
56-1	1.281	32.54	87.1	5.9	USTER	Spectrum □	HVI Test Method	5	
58-1	1.293	32.83	85.7	6.0	USTER	1000	Internal	10	
61-1	1.268	32.2	84.0		MAG	HVT Expert 1201	ASTM-5867-2005	4	
61-2	1.291	32.8	83.0		USTER	900	ASTM-5867-2005	4	
63-1	1.271	32.29	84.8	7.04	MAG	Other	ASTM-D-5867-12		No
64-1	1.236	31.4	83.1	7.1	MAG	Other	ASTM-D1234-2012		
69-1	1.228	31.2	85.1	7.07	MAG SOLVIS PVT LTD	Other	ASTM:D-5867-12		No
71-1	1.287	32.69	86.1	5.2	USTER	1000	GB/T 20392-2006	6	No
72-1	1.305	33.15	86.1	5.1	USTER	1000	ASTM-D1776	6	No
78-1	1.328	33.72	86.6	4.6	USTER	1000		6	No
79-1	1.305	33.15	87.5	6.4	USTER	1000	GB/T 20392-2006	2	No
83-1	1.271	32.28	86.0		USTER	Spectrum	GB/T 20392-2006	10	No
84-1	1.322	33.58	85.3	6.2	USTER	1000	USDA	12	Yes

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	UHML (inch)	UHML (mm)	Uniformity Index (%)	-SFI-	Manuf.	Model	Std. Test Method	Repeti- tions	SFI calibrated?
86-1	1.272	32.3	85.7	14.8 0	USTER	1000	GB/T20392-2006	10	
87-1	1.303	33.1	85.6	9.8	USTER	1000	GB/T20392-2006	6	
87-2	1.295	32.9	86.9	3.3	USTER	1000	GB/T20392-2006	6	
87-3	1.303	33.1	84.8	11.3	USTER	1000	GB/T20392-2006	6	
90-1	1.315	33.4	86.9	7.23	USTER	1000	ASTM-D 5867	10	
91-1	1.277	32.43	86.6	5.0	USTER	1000		6	No
94-1	1.304	33.12	85.7	4.5	USTER	1000	ASTM D 5867	6	Yes
94-2	1.276	32.41	85.7	4.5	USTER	1000	ASTM D 5867	6	Yes
96-1	1.291	32.78	86.6		Premier	HFT	GB/T 20392-2006	10	
96-2	1.291	32.8	86.7	5.9	USTER	other	GB/T 20392-2006	10	Yes
96-3	1.283	32.6	84.2		Premier	HFT	GB/T 20392-2006	10	Yes
96-4	1.267	32.19	86.0	6.28	USTER	93-4(HV11000-143)	GB/T 20392-2006	10	Yes
101-1	1.289	32.74	86.0	6.8	USTER	1000	ASTM 5867-2012	24	No
103-1	1.307	33.2	86.2	6.1	USTER	1000	GB/T 20392-2006	10	Yes
104-1	1.315	33.4	87.5	11.05	USTER	1000	GB/T20392	4	No
105-1	1.312	33.33	85.1	3.9	USTER	1000	ASTM D1776, ASTM D5867	10	No
106-1	1.3	33.02	86.1		USTER	900	ASTM D 5867	10	
107-1	1.205 0	30.6 0	83.2	7.5	Premier	ART 2	ASTM :D 5867-12		
108-1	1.304	33.12	85.5	6.6	USTER	1000	ASTM D 5867-12	10	Yes
109-1	1.291	32.8	85.6	6.0	USTER	1000		10	No
113-1	1.259	31.97	85.0	7.04	MAG	Other	ASTM-D-5867-12	10	No
119-1	1.294	32.86	86.8	5.6	USTER	1000	GB/T 20392	2	No
121-1	1.299	32.99	86.8	5.8	USTER	1000	GB/T 20392-2006	2	Yes
123-1	1.306	33.16	87.6	4.2	Premier	ART C	ASTM D 5867-2012	10	
123-2	1.293	32.84	86.7	5.8	USTER	1000	ASTM D 5867-12	10	
129-1	1.248	31.7	86.0	6.7	Premier	ART 2	ASTM-5867	10	No
138-1	1.281	32.54	86.9	4.4	USTER	Spectrum	ASTM D 5867-2012el	6	No
141-1	1.308	33.22	86.1	4.1	USTER	1000	Mode 4	1	No
145-1	1.332	33.83	87.0	6.4	Premier	ART 2			Yes
148-2	1.276	32.41	87.2	4.9	Uster	1000	ASTM-D 5867	6	Yes
150-1	1.165 0	29.6 0	78.0 0	14.55 0	Statex	Other	D1441 - 12	1	Yes
154-1	1.289	32.74	86.5	6.6	USTER	900	ASTM D 5867	10	Yes
162-1	1.303	33.1	87.1	3.7	USTER	900		6	Yes
175-1	1.334	33.88	88.5	6.8	USTER	1000	ASTM-D 5867-12	10	
179-1	1.288	32.72	86.4	3.7	USTER	1000	GB/T 20392-2006	6	No
186-1	1.261	32.02	87.89	4.6	Textechno	CCS-V5-3	ASTM	10	Yes
193-1	1.289	32.74	86.7	5.6	USTER	1000	GB/T 20392-2006	16	No
200-1	1.28	32.52	86.31		USTER	900	ASTM D 5867	10	
204-1	1.283	32.59	86.5	6.8	USTER		GB/T 20392-2006	12	No
207-1	1.289	32.73	86.4	5.9	USTER	1000	ASTM D 5867-12 el	10	No
207-2	1.3	33.02	86.5	6.3	USTER	1000	ASTM D 5867-12 el	10	No
207-3	1.282	32.56	86.2	7.5	USTER	1000	ASTM D 5867-12 el	10	No
207-4	1.283	32.58	85.8	6.4	USTER	1000	ASTM D 5867-12 el	10	No
214-1	1.265	32.13	85.6	6.3	Premier	ART		30	No
218-1	1.289	32.73	87.3	3.1	USTER	Spectrum	D5867	10	Yes

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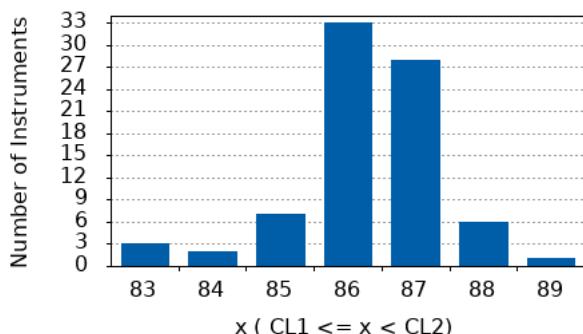
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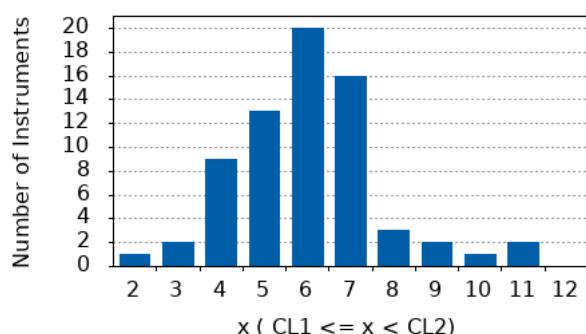


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HVI (HVICCS Calibration): Unif. Index



HVI (HVICCS Calibration): Short Fiber Index



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HVI (HVICCS Calibration): Color / Trash

	Color Rd	Color +b	Color Grade	Trash Count	Trash Area (%)	Trash Leaf	Manuf.	Model	Std. Test Method	Repetitions
Average	76.87	9.36		28.1	0.555					
Median	77.23	9.4		28.0	0.525					
Stddev	1.16	0.37		7.4	0.21					
CV	1.5	4.0		26.4	37.8					
Min	70.9	6.9		3	0.11					
Max	78.9	11.4		67	2.59					
n	77	77		55	55					
Laboratory	Color Rd	Color +b	Color Grade	Trash Count	Trash Area (%)	Trash Leaf	Manuf.	Model	Std. Test Method	Repetitions
6-1	77.3	9.4	31	27	0.432	3	USTER	1000	GB/T 20392-2006	4
9-1	71.3	11.1	33-1				PREMIER	ART		4
11-1	74.05	8.9	31 - 4				PREMIER	ART2	USDA	10
12-1	74.2	9.5	31-3	20	0.36	4	Premier	ART 2	GB/T 20392-2006	6
18-1	77.7	9.4	21-3	32	0.8	5	USTER	1000	SYSTEM TESTING-INDIVIDUAL TESTS	20
19-1	77.9	9.5	21-3	30	0.31	3	USTER	1000	GB/T 20392-2006	
23-1	77.3	9.2	31-3	36	0.57	4	USTER	1000	D 5867	10
25-1	77.8	9.8	21-3	26	0.44	3	USTER	1000		10
26-1	77.6	9.5	21-3	24	0.4	3	USTER	1000		10
27-1	74.35	9.42	31-4				USTER	900.0	ASTM D5867-12e1	10
28-1	76.36	9.01	31-3	31	0.63	5	Textechno	HVI	ASTM-D5867	5
33-1	77.0	9.0	31				USTER	1000	GB/T20392	6
33-2	77.0	9.2	31				USTER	1000	GB/T20392	6
35-1	77.3	9.5	12	30	0.44	3	USTER	1000	GB/T20392-2006	2
38-1	77.7	9.2	21-4	42	0.47	4	USTER	1000	ASTM	6
39-1	77.6	8.8	21-4				Premier	ART 2		6
41-1	75.2	9.7	31-3	30	0.37		Uster	Spectrum		6
44-1	77.4	9.9	22-1	31	0.57		USTER	1000		10
44-2	74.0	10.1	32-1				Premier	ART 2		10
49-1	76.8	9.1	31-3	43	0.99	6	USTER	1000	ASTM D 1776	12
55-1	76.8	9.5	31-4				MAG	OTHER	ASTM-D:5867-12	
56-1	73.3	9.1	42-1	9	0.11	1	USTER	Spectrum □	HVI Test Method	5
58-1	78.1	9.9		28	0.48		USTER	1000	Internal	10
61-1	76.2	9.7	31-2				MAG	HVT Expert 1201	ASTM-5867-2005	4
61-2	76.2	9.7	31-2				USTER	900	ASTM-5867-2005	4
63-1	77.4	9.5	21-4				MAG	Other	ASTM-D-5867-12	
64-1	75.6	9.8	32--1				MAG	Other	ASTM-D1234-2012	
69-1	78.9	9.2	21-1				MAG SOLVIS PVT LTD	Other	ASTM:D-5867-12	
71-1	77.8	9.3	1	18	0.4	2	USTER	1000	GB/T 20392-2006	6
72-1	77.8	9.5		26	0.55		USTER	1000	ASTM-D1776	6
78-1	75.6	9.5	31-3	27	0.6	4	USTER	1000		6
79-1	76.5	9.8	12	29	0.54	9	USTER	1000	GB/T 20392-2006	2
83-1	77.3	9.5	21-3	19	2.59	0	USTER	Spectrum	GB/T 20392-2006	10
84-1	77.7	9.5	21-3	33	0.44	4	USTER	1000	USDA	12
86-1	76.7	9.5	22	41	0.57	3	USTER	1000	GB/T20392-2006	10
87-1	77.5	9.4	31	36	0.72	3	USTER	1000	GB/T20392-2006	6

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	Color Rd	Color +b	Color Grade	Trash Count	Trash Area (%)	Trash Leaf	Manuf.	Model	Std. Test Method	Repetitions
87-2	76.5	9.9	12	28	0.48	3	USTER	1000	GB/T20392-2006	6
87-3	78.0	9.4	31	31	0.53	3	USTER	1000	GB/T20392-2006	6
90-1	76.2	11.4 ()	13-2	24	0.31		USTER	1000	ASTM-D 5867	10
91-1	76.3	9.4	31-3	22	0.54		USTER	1000		6
94-1	77.1	9.6	21-4	32	0.52	4	USTER	1000	ASTM D5867	6
94-2	77.1	9.6	21-4	28	0.46	4	USTER	1000	ASTM D5867	6
96-2	77.23	8.56					USTER	other	GB/T 20392-2006	10
96-4	77.53	9.5					USTER	93-4(HV11000-143)	GB/T 20392-2006	10
101-1	78.1	9.3	21-3	37	0.77	4	USTER	1000	ASTM 5687-2012	24
103-1	76.0	9.3	31-3	25	0.41	3	USTER	1000	GB/T 20392-2006	10
104-1	77.9	9.3	31	24	0.61	3	USTER	1000	GB/T20392	4
105-1	77.6	9.3	21-4	33	0.74	4	USTER	1000	ASTM D1776, ASTM D5867	10
106-1	76.98	9.89	21-3				USTER	900	ASTM D5867	10
107-1	76.5	10.2	22-1				Premier	ART 2	ASTM :D 5867-12	
108-1	77.8	9.4	21-3	34	0.86	6	USTER	1000	ASTM D5867-12	10
109-1	77.2	9.3	21-4	23	0.41		USTER	1000		10
113-1	77.5	8.0	31-2				MAG	Other	ASTM-D-5867-12	10
119-1	76.9	9.8	12	67 ()	1.16	4	USTER	1000	GB/T 20392	2
121-1	77.4	9.5	21-4	29	0.56		USTER	1000	GB/T 20392-2006	2
123-1	76.9	9.6	21-3	46	0.83		Premier	ART C	ASTM D5867-2012	10
123-2	78.0	9.5	21-3	26	0.5	4	USTER	1000	ASTM D5867-12	10
129-1	74.8	9.9	32-1				Premier	ART 2	ASTM-5867	10
138-1	75.5	8.8	31-4	18	0.26	3	USTER	Spectrum	ASTM D 5867-2012e1	6
141-1	77.3	9.4	21-4	31	0.46		USTER	1000	Mode 4	1
145-1	77.7	9.1	21.3				Premier	ART 2		
148-2	75.9	9.0	31-3	36	1.13	6	Uster	1000	ASTM-D 5867	6
150-1	70.9 ()	6.9 ()	51-1				Statex	Other	D1441 - 12	1
154-1	77.2	9.2	21-4	16	0.4	1	USTER	900	ASTM D5867	10
162-1	76.4	9.5					USTER	900		6
175-1	77.7	9.0	21-2	28	0.51	3	USTER	1000	ASTM-D5867-12	10
179-1	76.7	9.0	1	25	0.6	4	USTER	1000	GB/T 20392-2006	6
186-1	75.79	8.44	41-1	22	0.44	3	Textechno	CCS-V5-3	ASTM	10
193-1	77.7	9.3	1	36	0.53	3	USTER	1000	GB/T 20392-2006	16
200-1	77.7	8.89	31-1	26	0.68	4	USTER	900	ASTM D5867	10
204-1	74.1	9.2	1	22	0.41	3	USTER		GB/T 20392-2006	12
207-1	77.3	9.2	31-3	29	0.74	5	USTER	1000	ASTM D5867-12 e1	10
207-2	77.7	9.2	21-4	27	0.79	5	USTER	1000	ASTM D5867-12 e1	10
207-3	76.8	9.2	31-3	31	0.61	4	USTER	1000	ASTM D5867-12 e1	10
207-4	78.0	9.3	21-4	30	0.89	6	USTER	1000	ASTM D5867-12 e1	10
214-1	77.7	9.2	21-3	13	0.44	4	Premier	ART		30
218-1	78.6	8.8	21-2	17	0.19	2	USTER	Spectrum	D5867	10

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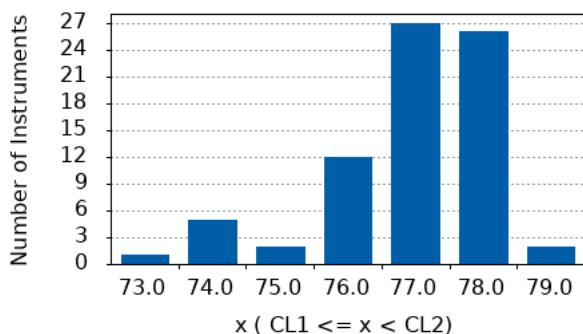
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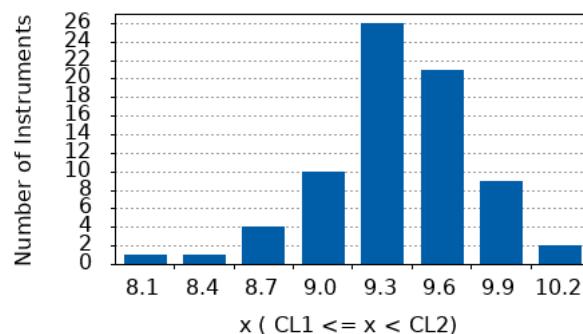


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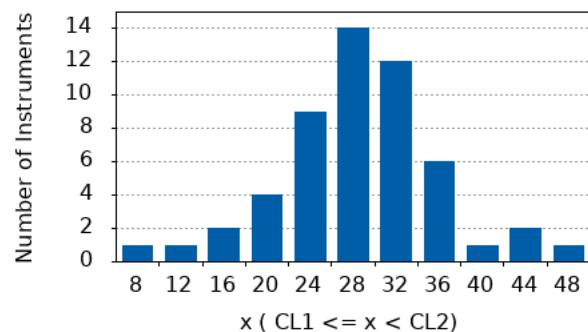
HVI (HVICCS Calibration): Color Reflectance R_c



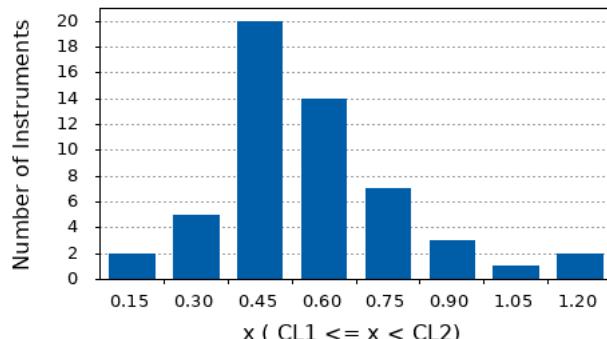
HVI (HVICCS Calibration): Color Yellowness +b



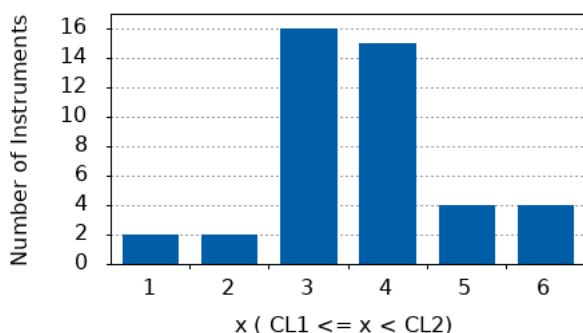
HVI (HVICCS Calibration) Trash Count



HVI (HVICCS Calibration) Trash Area



HVI (HVICCS Calibration) Trash Leaf



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HVI (ICCS Calibration) Micronaire / Strength

	Micronaire (Mic)	MAT ()	PM% (%)	Strength (gf/tex)	Elong. (%)	Manuf.	Model	Std. Test Method	Repetitions
Average	4.53			34.98	6.41				
Median	4.5			31.0	6.1				
Stddev	0.09			8.11	1.2				
CV	1.9			23.2	18.1				
Min	4.4	0.87		28.4	5.3				
Max	4.9	0.88		49.7	11.9				
n	10	3		10	10				
Laboratory	Micronaire (Mic)	MAT ()	PM% (%)	Strength (gf/tex)	Elong. (%)	Manuf.	Model	Std. Test Method	Repetitions
11-1	4.66			28.5	5.5	PREMIER	ART2	USDA	10
27-1	4.9 ()			33.7	5.4	USTER	900.0	ASTM- D5867-2012	10
40-2	4.61	0.87		49.7	7.5	USTER	1000	INTERNAL	10
40-3	4.6			42.4	8.8	USTER	900	INTERNAL	10
61-1	4.5			28.4	6.8	MAG	HVT Expert 1201	ASTM-5867-2005	4
61-2	4.5			29.8	5.3	USTER	900	ASTM-5867-2005	4
123-1	4.4	0.88		30.9	6.1	Premier	ART C	SITRA INHOUSE STANDARD	10
123-2	4.61	0.87		31.1	5.7	USTER	1000	SITRA INHOUSE STANDARD	10
129-1	4.48			28.7	6.6	PREMIER	Other	ASTM - 5867	10
186-1	4.45			46.6	11.9 ()	Textechnic	CCS-V5-3	ASTM	10

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HVI (ICCS Calibration): Length Results

	2.5% SL (inch)	2.5% SL (mm)	Unif. Ratio (%)	SFI	Manuf.	Model	Std. Test Method	Repetitions
Average	1.288	32.71	48.41	5.03				
Median	1.2805	32.535	49.585	5.35				
Stddev	0.026	0.65	2.03	0.86				
CV	2.0	2.0	4.2	17.0				
Min	1.255	31.88	45.0	3.5				
Max	1.328	33.73	50.0	5.7				
n	10	10	8	6				
Laboratory	2.5% SL (inch)	2.5% SL (mm)	Unif. Ratio (%)	SFI	Manuf.	Model	Std. Test Method	Repetitions
11-1	1.274	32.37	46.7		PREMIER	ART2	USDA	10
27-1	1.255	31.88	49.7	5.5	USTER	900.0	ASTM- D5867-2012	10
40-2	1.328	33.73		5.2	USTER	1000	INTERNAL	10
40-3	1.29	32.77			USTER	900	INTERNAL	10
61-1	1.268	32.2	50.0		MAG	HVT Expert 1201	ASTM-5867-2005	4
61-2	1.287	32.7	50.0		USTER	900	ASTM-5867-2005	4
123-1	1.317	33.46	46.43	5.7	Premier	ART C	SITRA INHOUSE STANDARD	10
123-2	1.319	33.51	50.0	5.7	USTER	1000	SITRA INHOUSE STANDARD	10
129-1	1.272	32.3	45.0	3.5	PREMIER	Other	ASTM - 5867	10
186-1	1.265	32.14	49.47	4.6	Textechno	CCS-V5-3	ASTM	10

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HVI (ICCS Calibration): Color / Trash

	Color Rd	Color +b	Color Grade	Trash Count	Trash Area (%)	Trash Leaf	Manuf.	Model	Std. Test Method	Repetitions
Average	75.88	9.53								
Median	75.9	9.55								
Stddev	1.46	0.38								
CV	1.9	4.0								
Min	74.05	8.9		35	0.79					
Max	78.7	10.1		58	1.2					
n	8	8		3	3					
Laboratory	Color Rd	Color +b	Color Grade	Trash Count	Trash Area (%)	Trash Leaf	Manuf.	Model	Std. Test Method	Repetitions
11-1	74.05	8.9	31-4				PREMIER	ART2	USDA	10
40-2	78.7	10.1	11-4	42	0.85	5	USTER	1000	INTERNAL	10
40-3	75.1	9.4	31-3				USTER	900	INTERNAL	10
61-1	75.9	9.7	31-2				MAG	HVT Expert 1201	ASTM-5867-2005	4
61-2	75.9	9.7	31-2				USTER	900	ASTM-5867-2005	4
123-1	76.4	9.8	21-3	58	1.2		Premier	ART C	SITRA INHOUSE STANDARD	10
123-2	76.6	9.2	31-3	35	0.79	5	USTER	1000	SITRA INHOUSE STANDARD	10
129-1	74.4	9.4	31-4				PREMIER	Other	ASTM - 5867	10

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aQura - Length

	aQura-Length (mm)	5% Length (mm)	Effective Length (mm)	SFC 12.7mm (N) (%)	SFC 12.7mm (W) (%)	Instrument Model	Standard Test Method	Repeti- tions
Average								
Median								
Stddev								
CV								
Min								
Max								
n								
Laborato- ry	aQura-Length (mm)	5% Length (mm)	Effective Length (mm)	SFC 12.7mm (N) (%)	SFC 12.7mm (W) (%)	Instrument Model	Standard Test Method	Repeti- tions
44-2	35.99	34.55	29.62	24.6	9.1	aQura 2		10

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aQura - Neps

	Total Nep Count (Cnt/g)	Total Nep Size (µm)	Fibre Nep Count (Cnt/g)	Fibre Nep Size (µm)	Seed Coat Nep Count (Cnt/g)	Seed Coat Nep Size (µm)	Instrument Model	Standard Test Method
Average								
Median								
Stddev								
CV								
Min								
Max								
n								
Laboratory	Total Nep Count (Cnt/g)	Total Nep Size (µm)	Fibre Nep Count (Cnt/g)	Fibre Nep Size (µm)	Seed Coat Nep Count (Cnt/g)	Seed Coat Nep Size (µm)	Instrument Model	Standard Test Method
44-2	77.0	814.0	58.0	648.0	20.0	1306.0	aQura 2	

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AFIS Length by Number

	Mean Length (N) (inch)	Mean Length (N) (mm)	CV Length (N) (%)	2.5% Length (N) (inch)	2.5% Length (N) (mm)	5% Length (N) (inch)	5% Length (N) (mm)	SFC (12.7) (N) (%)	Mode 1	Test Method	Repetitions
Average	0.92	23.36	44.37	1.641	41.69	1.51	38.36	16.71			
Median	0.918	23.325	44.6	1.632	41.45	1.508	38.3	17.05			10.0
Stddev	0.028	0.72	2.2	0.061	1.54	0.03	0.75	2.39			
CV	3.1	3.1	5.0	3.7	3.7	2.0	2.0	14.3			
Min	0.866	22.0	38.0	1.555	39.5	1.457	37.0	12.0			
Max	1.008	25.6	48.6	1.73	43.94	1.598	40.6	21.1			
n	29	29	28	10	10	28	28	30			
Laboratory	Mean Length (N) (inch)	Mean Length (N) (mm)	CV Length (N) (%)	2.5% Length (N) (inch)	2.5% Length (N) (mm)	5% Length (N) (inch)	5% Length (N) (mm)	SFC (12.7) (N) (%)	Mode 1	Test Method	Repetitions
21-1	0.937	23.8	38.0	1.555	39.5	1.457	37.0	12.0	AFIS 119-064		5
32-1	0.898	22.8	44.2			1.488	37.8	17.5	AFIS Pro 2		10
32-2	0.87	22.1	45.9			1.472	37.4	19.6	AFIS Pro 2		10
38-1	1.008	25.6	42.2	1.728	43.9	1.598	40.6	12.7	AFIS Pro	ASTM	5
40-1	0.9	22.86	46.1	1.63	41.4	1.5	38.1	19.1	AFIS Pro	INTERNAL	10
40-3	0.92	23.37	48.6	1.73	43.94	1.57	39.88	21.1	AFIS Pro	INTERNAL	10
40-4	0.93	23.62	46.4	1.67	42.42	1.55	39.37	18.9	AFIS Pro	INTERNAL	10
41-1	0.913	23.2	41.5	1.594	40.5	1.484	37.7	15.1	AFIS Pro		10
44-1	0.917	23.3	44.6			1.524	38.7	16.3	AFIS Pro		10
51-1	0.945	24.0	41.1			1.496	38.0	14.2	AFIS Pro	ISO-9001	5
58-1	0.894	22.7	45.9			1.488	37.8	17.7	AFIS Pro 2	Internal	10
90-1	0.984	25.0	41.4	1.685	42.8	1.563	39.7	12.8	AFIS 4.22	USTER Method	10
91-1	0.945	24.0	40.5			1.508	38.3	13.5	AFIS Pro 2		10
91-2	0.866	22.0	45.9			1.476	37.5	18.9	AFIS Pro 2		10
96-3	0.89	22.6						20.1	AFIS Pro 2	NY/T 3272-2018	10
101-1	0.929	23.6	43.6			1.512	38.4	15.2	AFIS Pro 2	internal	10
109-1	0.89	22.6	46.5			1.492	37.9	18.3	AFIS Pro 2		10
123-1	0.89	22.6	48.1			1.508	38.3	19.5	AFIS Pro	ASTM-D5866-2012	10
123-2	0.969	24.6	40.7			1.531	38.9	13.7	AFIS	ASTM-D5866-2012	10

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	Mean Length (N) (inch)	Mean Length (N) (mm)	CV Length (N) (%)	2.5% Length (N) (inch)	2.5% Length (N) (mm)	5% Length (N) (inch)	5% Length (N) (mm)	SFC (12.7) (N) (%)	Mode 1	Test Method	Repetitions
123-3	0.937	23.8	44.2			1.535	39.0	16.0	AFIS Pro 2	ASTM-D5866-2012	10
129-1	0.919	23.35	44.6			1.528	38.8	17.4	Other	ASTM-D-5866-12	6
142-1	0.945	24.0	42.6	1.606	40.8	1.52	38.6	15.0	Other		5
145-1				1.58	40.13	1.47	37.34	18.5	Other		
148-1	0.902	22.9	45.4			1.488	37.8	17.6	AFIS PRO 2	ASTM-D 5866	10
148-2	0.917	23.3	43.1			1.488	37.8	15.9	AFIS PRO 2	ASTM-D 5866	10
154-1	0.957	24.3	43.9	1.634	41.5	1.531	38.9	15.9	Autojet	ASTM D5866	10
186-1	0.902	22.9	46.4					17.95	AFIS Pro	ASTM	10
186-2	0.945	24.0	43.5			1.551	39.4	15.8	AFIS Pro 2	ASTM	10
193-1	0.91	23.11	46.0			1.51	38.35	18.4	AFIS Pro	ASTM D5866-12	5
207-2	0.933	23.7	45.1			1.535	39.0	16.7	AFIS Pro	ASTM D5866-12 & USTER Application Handbook V2.1 May 2005 245 654-04020	10

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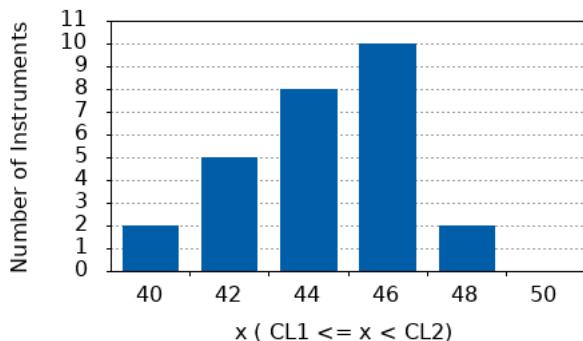
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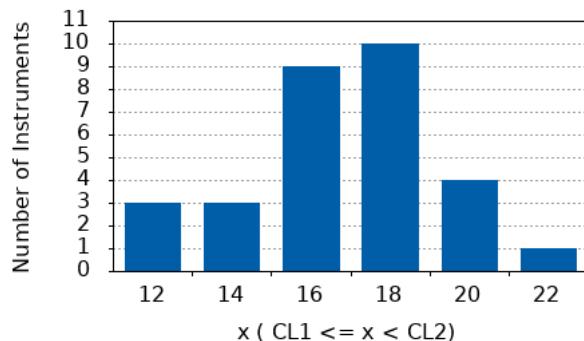


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AFIS CV Length (N), %



AFIS SFC (12.7mm) (N), %



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AFIS Length by Weight

	Mean Length (W) (inch)	Mean Length (W) (mm)	CV Length (W) (%)	UQL (W) (inch)	UQL (W) (mm)	SFC (12.7) (W)	Model	Test Method	Repetitions
Average	1.1	27.996	31.99	1.325	33.66	4.96			
Median	1.1	27.94	32.25	1.3235	33.62	5.0			
Stddev	0.04	0.904	1.62	0.029	0.74	0.87			
CV	3.2	3.2	5.1	2.2	2.2	17.6			
Min	1.005	25.52	28.9	1.272	32.3	3.4			
Max	1.465	37.2	35.5	1.409	35.8	9.8			
n	30	30	28	31	31	31			
Laboratory	Mean Length (W) (inch)	Mean Length (W) (mm)	CV Length (W) (%)	UQL (W) (inch)	UQL (W) (mm)	SFC (12.7) (W)	Model	Test Method	Repetitions
21-1	1.075	27.3	28.9	1.272	32.3	3.7	Afis 119-064		5
28-1	1.005	25.52		1.277	32.43	9.8	Other		5
32-1	1.075	27.3	33.1	1.307	33.2	5.8	AFIS Pro 2		10
32-2	1.051	26.7	34.5	1.287	32.7	6.6	AFIS Pro 2		10
38-1	1.197	30.4	29.5	1.409	35.8	3.5	AFIS Pro	ASTM	5
40-1	1.1	27.94	32.7	1.32	33.53	5.7	AFIS Pro	INTERNAL	10
40-3	1.13	28.7	35.5	1.38	35.05	6.9	AFIS Pro	INTERNAL	10
40-4	1.14	28.96	32.9	1.37	34.8	5.5	AFIS Pro	INTERNAL	10
41-1	1.465	37.2	31.7	1.283	32.6	5.0			
44-1	1.098	27.9	32.7	1.331	33.8	4.8	AFIS Pro		10
51-1	1.102	28.0	29.8	1.311	33.3	4.1	AFIS Pro	ISO-9001	5
58-1	1.083	27.5	32.6	1.307	33.2	5.0	AFIS Pro 2	Internal	10
90-1	1.154	29.3	30.1	1.378	35.0	3.4	AFIS 4.22	USTER Method	10
91-1	1.098	27.9	31.4	1.319	33.5	4.4	AFIS Pro 2		10
91-2	1.047	26.6	34.2	1.283	32.6	6.2	AFIS Pro 2		10
96-3	1.094	27.8		1.331	33.8	5.9	AFIS Pro 2	NY/T 3272-2018	10
101-1	1.106	28.1	31.1	1.327	33.7	4.1	AFIS Pro 2	internal	10
109-1	1.079	27.4	33.0	1.315	33.4	5.3	AFIS Pro 2		10
123-1	1.098	27.9	33.2	1.327	33.7	5.3	AFIS Pro	ASTM-D5866-2012	10
123-2	1.126	28.6	30.5	1.343	34.1	4.2	AFIS Pro	ASTM-D5866-2012	10
123-3	1.118	28.4	31.1	1.346	34.2	4.4	AFIS Pro 2	ASTM-D5866-2012	10

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Place of jurisdiction: Bremen

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	Mean Length (W) (inch)	Mean Length (W) (mm)	CV Length (W) (%)	UOL (W) (inch)	UOL (W) (mm)	SFC (12.7) (W)	Model	Test Method	Repetitions
129-1	1.102	28.0	33.25	1.335	33.9	5.55	Other	ASTM-D-5866-12	6
142-1	1.118	28.4	30.3	1.354	34.4	4.2	Other		5
145-1				1.31	33.27	5.1	Other		
148-1	1.087	27.6	32.9	1.311	33.3	5.3	AFIS PRO 2	ASTM-D 5866	10
148-2	1.087	27.6	32.0	1.311	33.3	4.9	AFIS PRO 2	ASTM-D 5866	10
154-1	1.142	29.0	29.5	1.358	34.5	3.9	Autojet	ASTM D5866	10
186-1	1.097	27.87	31.86	1.32	33.54	4.7	AFIS Pro	ASTM	10
186-2	1.122	28.5	32.5	1.362	34.6	5.0	AFIS Pro 2	ASTM	10
193-1	1.11	28.19	33.0	1.33	33.78	5.5	AFIS Pro	ASTM D5866-12	5
207-2	1.122	28.5	31.9	1.35	34.3	4.7	AFIS Pro	ASTM D5866-12 & USTER Application Handbook V2.1 May 2005 245 654-04020	10

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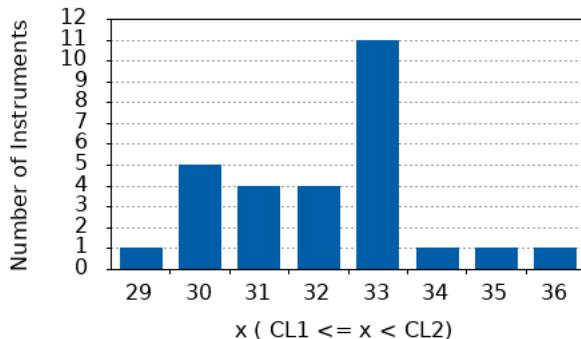
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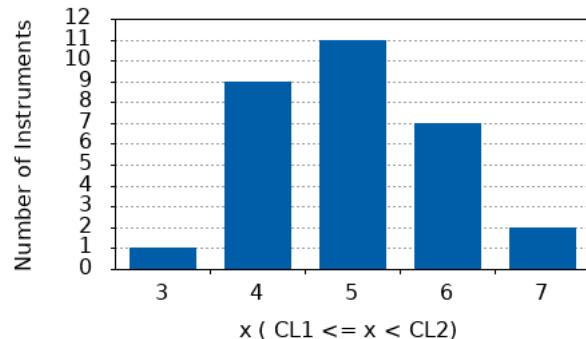


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AFIS CV Length (W), %



AFIS SFC (12.7mm) (W), %



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AFIS Fineness/Maturity

	Fineness (m tex)	Mat. Ratio	-IFC- (%)	Model	Test Method	Repetitions
Average	157.3	0.96	4.76			
Median	155.5	0.96	4.7			
Stddev	8.3	0.03	0.66			
CV	5.3	3.2	13.8			
Min	138.0	0.81	2.15			
Max	201.0	1.03	6.6			
n	27	27	25			
Laboratory	Fineness (m tex)	Mat. Ratio	-IFC- (%)	Model	Test Method	Repetitions
28-1	201.0	0.81	0	Other		5
32-1	172.0	1.03	2.15	AFIS Pro 2		10
32-2	168.0	1.01		AFIS Pro 2		10
38-1	150.0	0.93	4.2	AFIS Pro	ASTM	5
40-1	138.0	0.99	5.3	AFIS Pro	INTERNAL	10
40-3	159.0	0.97	5.2	AFIS Pro	INTERNAL	10
40-4	171.0	0.98	4.7	AFIS Pro	INTERNAL	10
44-1	155.0	0.95	4.7	AFIS Pro		10
51-1	158.0	0.99	4.0	AFIS Pro	ISO-9001	5
58-1	152.0	0.94	5.3	AFIS Pro 2	Internal	10
90-1	143.0	0.9	5.2	AFIS 4.22	USTER Method	10
91-1	158.0	0.96	4.5	AFIS Pro 2		10
91-2	154.0	0.96	4.5	AFIS Pro 2		10
96-3	155.0	0.93	5.1	AFIS Pro 2	NY/T 3272-2018	10
101-1	157.0	0.96	5.3	AFIS Pro 2	internal	10
109-1	154.0	0.96	4.2	AFIS Pro 2		10
123-1	154.0	0.94	4.5	AFIS Pro	ASTM-D5866-2012	10
123-2	166.0	0.98	5.3	AFIS	ASTM-D5866-2012	10
123-3	152.0	0.95	4.4	AFIS Pro 2	ASTM-D5866-2012	10
145-1	170.0	1.02	4.3	Other		
148-1	153.0	0.95	4.9	AFIS PRO 2	ASTM-D 5866	10
148-2	158.0	0.95	4.7	AFIS PRO 2	ASTM-D 5866	10
154-1	170.0	1.0	3.4	Autojet	ASTM D5866	10
186-1	155.0	0.963	3.97	AFIS Pro	ASTM	10
186-2	151.0	0.91	6.6	AFIS Pro 2	ASTM	10
193-1	156.0	0.96	4.5	AFIS Pro	ASTM D5866-12	5
207-2	162.0	0.97	5.5	AFIS Pro	ASTM D5866-12 & USTER Application Handbook V2.1 May 2005 245 654-04020	10

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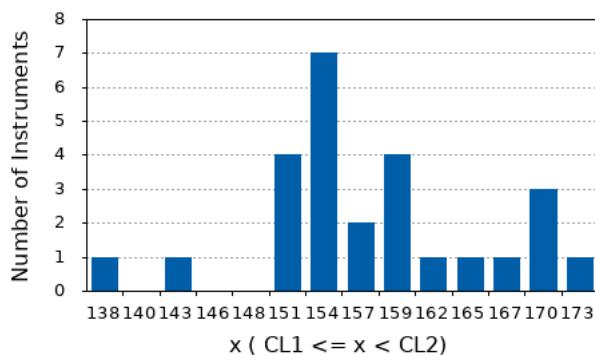
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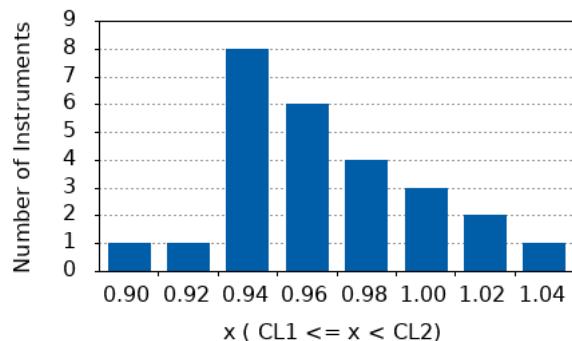


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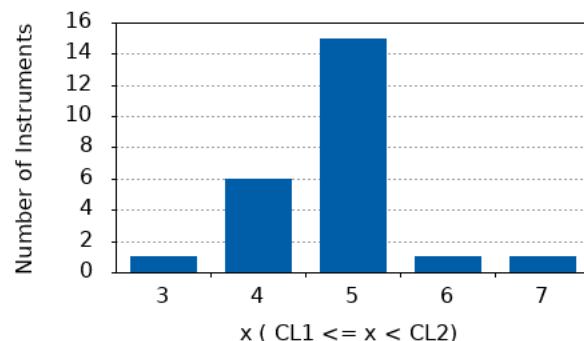
AFIS Fineness, mtex



AFIS Maturity Ratio



AFIS I.F.C., %



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AFIS Neps

	Fiber Nep Count (cnt/g)	Fiber Nep Size (µm)	SC Nep Count (cnt/g)	SC Nep Size (µm)	Total Nep Count (cnt/g)	Total Nep Size (µm)	Model	Test Method	Repetitions
Average	83.2	671.1	5.8	1105.6	83.3	679.3			
Median	85.5	658.0	5.0	1107.0	89.0	679.5			10.0
Stddev	23.8	46.0	3.3	168.0	25.9	72.2			
CV	28.6	6.9	56.5	15.2	31.1	10.6			
Min	7.0	78.0	1.0	812.0	35.0	247.0			
Max	125.0	812.0	35.0	1605.0	138.0	1154.0			
n	21	18	28	28	29	28			
Laboratory	Fiber Nep Count (cnt/g)	Fiber Nep Size (µm)	SC Nep Count (cnt/g)	SC Nep Size (µm)	Total Nep Count (cnt/g)	Total Nep Size (µm)	Model	Test Method	Repetitions
21-1	35.0	812.0	35.0	812.0	35.0	812.0	AFIS 119-064		5
27-1	108.0								
32-1	102.0	650.0	7.0	914.0	102.0	650.0	AFIS Pro 2		10
32-2	96.0	634.0	5.0	987.0	101.0	649.0	AFIS Pro 2		10
38-1					39.0	393.0	AFIS Pro	ASTM	5
40-1			5.0	1086.0	137.0	704.0	AFIS Pro	INTERNAL	10
40-2			7.0	1044.0	90.0	686.0	AFIS Pro	INTERNAL	10
40-3			5.0	1161.0	63.0	745.0	AFIS Pro	INTERNAL	10
40-4			5.0	996.0	75.0	675.0	AFIS Pro	INTERNAL	10
41-1	125.0					680.0			
44-1	63.0	655.0	2.0	987.0			AFIS Pro		10
51-1	87.0	656.0	10.0	1444.0	97.0	741.0	AFIS Pro	ISO-9001	5
58-1	87.0	658.0	7.0	1001.0	95.0	684.0	AFIS Pro 2	Internal	10
90-1	88.0	702.0	6.0	1605.0	94.0	1154.0	AFIS 4.22	USTER Method	10
91-1	81.0	666.0	4.0	1107.0	85.0	687.0	AFIS Pro 2		10
91-2	94.0	650.0	6.0	926.0	100.0	668.0	AFIS Pro 2		10
96-3	69.0	640.0	3.0	1121.0			AFIS Pro 2	NY/T 3272-2018	10
101-1	84.0	669.0	11.0	1243.0	95.0	669.0	AFIS Pro 2	internal	10
109-1	105.0	668.0	5.0	1178.0	110.0	685.0	AFIS Pro 2		10
123-1			2.0	878.0	70.0	634.0	AFIS Pro	ASTM-D5866-2012	10

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	Fiber Nep Count (cnt/g)	Fiber Nep Size (µm)	SC Nep Count (cnt/g)	SC Nep Size (µm)	Total Nep Count (cnt/g)	Total Nep Size (µm)	Model	Test Method	Repetitions
123-2			4.0	997.0	79.0	663.0	AFIS	ASTM-D5866-2012	10
123-3	55.0	661.0	1.0	1271.0	57.0	675.0	AFIS	ASTM-D5866-2012	10
129-1			2.0	1162.0	48.0	670.0	Other	ASTM-D-5866-12	6
142-1					46.0	641.0	Other		5
145-1	7.0 ()	78.0 ()	4.0	883.0	78.0	247.0 ()	Other		
148-1	56.0	618.0	3.0	1122.0	59.0	638.0	AFIS PRO 2	ASTM-D 5866	10
148-2	49.0	673.0	4.0	1413.0	53.0	720.0	AFIS PRO 2	ASTM-D 5866	10
148-3					100.0		Nepster		
154-1			11.0	1253.0	91.0	723.0	Autojet	ASTM D5866	10
186-1	79.0		10.0	1293.0	89.0	714.0	AFIS Pro	ASTM	10
186-2	78.0	649.0	6.0	1116.0	84.0	679.0	AFIS Pro 2	ASTM	10
193-1			6.0	1395.0	105.0	776.0	AFIS Pro	ASTM D5866-12	5
207-2	123.0	747.0	15.0	1061.0	138.0		AFIS Pro	ASTM D5866-12 & USTER Application Handbook V2.1 May 2005 245 654-04020	10

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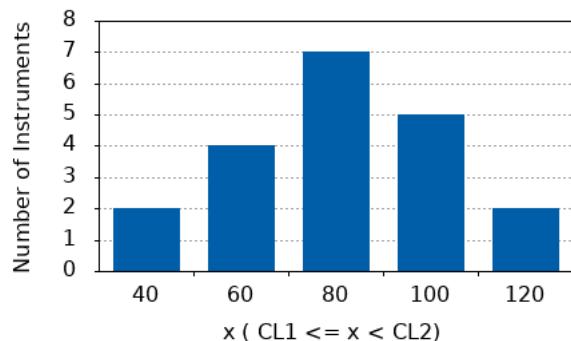
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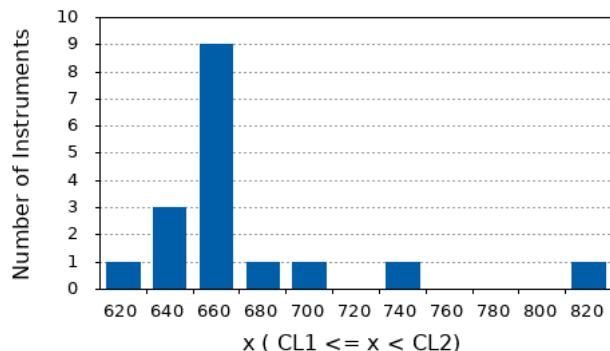


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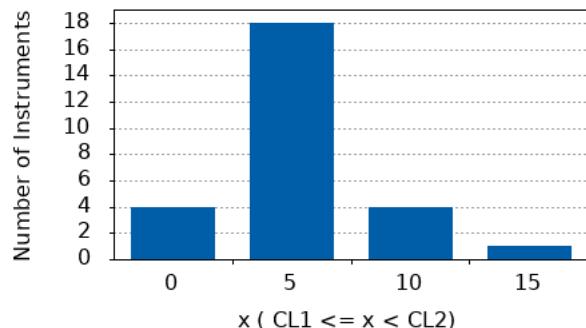
AFIS Fiber Nep Count, cnt/g



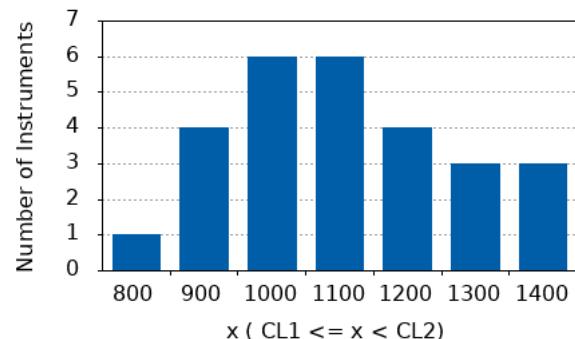
AFIS Fiber Nep Size, µm



AFIS SC Nep Count, cnt/g



AFIS SC Nep Size, µm



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AFIS Trash

	Trash Count (cnt/g)	Trash Size (µm)	Dust Count (cnt/g)	Dust Size (µm)	Total Trash Cnt (cnt/g)	Total Trash Size (µm)	V.F.M. (%)	Model	Test Method	Repetitions	
Average	71.9	799.1	723.6	174.3	693.4	237.4	1.7				
Median	68.0	958.5	705.0	175.5	717.5	236.0	1.53			10.0	
Stddev	28.2	334.9	202.3	7.2	382.1	23.3	0.52				
CV	39.2	41.9	28.0	4.1	55.1	9.8	30.4				
Min	30.0	228.0	272.0	159.0	73.0	194.0	0.79				
Max	508.0	1065.0	1336.0	185.0	1491.0	763.0	3.56				
n	20	12	20	10	20	17	20				
Laboratory	Trash Count (cnt/g)	Trash Size (µm)	Dust Count (cnt/g)	Dust Size (µm)	Total Trash Cnt (cnt/g)	Total Trash Size (µm)	V.F.M. (%)	Model	Test Method	Repetitions	
21-1	69.0		1082.0		1151.0	201.0	2.27	AFIS 119-064		5	
32-1	61.0	909.0	701.0	174.0	231.0	763.0	0	AFIS Pro 2		10	
32-2	61.0	909.0	701.0	174.0	231.0	763.0	0	AFIS Pro 2		10	
38-1	73.0	228.0	848.0		73.0		1.95	AFIS Pro	ASTM	5	
51-1	508.0	0	266.0	456.0	177.0	508.0	266.0	1.53	AFIS Pro	ISO-9001	5
58-1	110.0	1004.0	1085.0	176.0	1196.0	253.0	2.93	AFIS Pro 2	Internal	10	
90-1	56.0		780.0		836.0	220.0	1.27	AFIS 4.22	USTER Method	10	
91-1	86.0	943.0	952.0	166.0	1038.0	227.0	2.14	AFIS Pro 2		10	
91-2	79.0	996.0	644.0	180.0	722.0	267.0	2.07	AFIS Pro 2		10	
101-1	50.0	974.0	563.0	185.0	613.0	246.0	1.3	AFIS Pro 2	internal	10	
129-1	35.0		272.0		307.0		0.8	Other	ASTM-D-5866-12	6	
142-1	30.0		518.0		548.0	194.0	0.79	Other		5	
145-1	78.0		724.0		78.0	247.0	1.94	Other			
148-1	76.0	1017.0	705.0	177.0	780.0	255.0	1.95	AFIS PRO 2	ASTM-D 5866	10	
148-2	55.0	1065.0	628.0	159.0	683.0	236.0	1.51	AFIS PRO 2	ASTM-D 5866	10	
154-1	62.0		651.0		713.0	223.0	1.46	Autojet	ASTM D5866	10	
186-1	59.0		902.0		961.0	221.0	1.47	AFIS Pro	ASTM	10	
186-2	103.0	1025.0	717.0	175.0	820.0	270.0	1.934	AFIS Pro 2	ASTM	10	
193-1	68.0		819.0		887.0	235.0	2.05	AFIS Pro	ASTM D5866-12	5	
207-2	155.0	253.0	1336.0	0	1491.0		3.56	0 AFIS Pro	ASTM D5866-12 & USTER Application Handbook V2.1 May 2005 245 654-04020	10	

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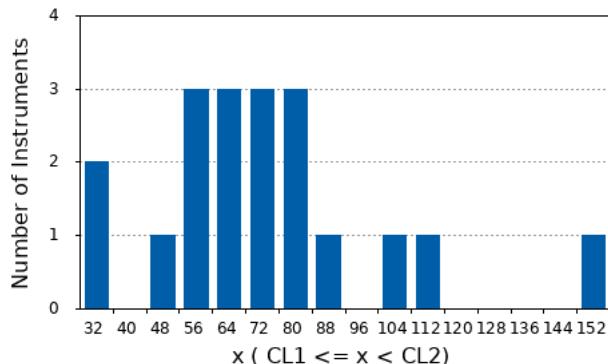
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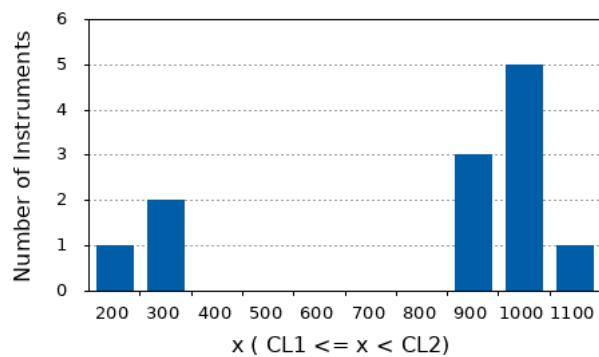


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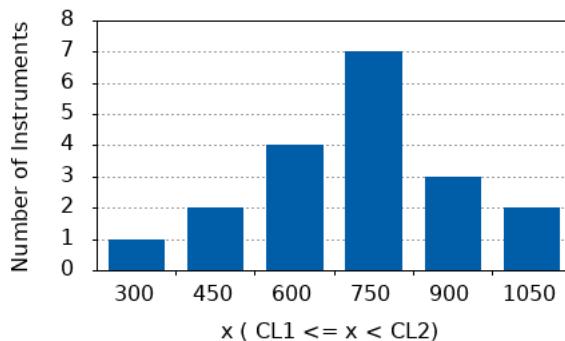
AFIS Trash Count, cnt/g



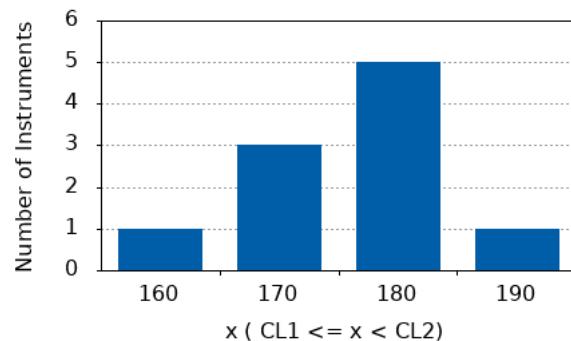
AFIS Trash Size, µm



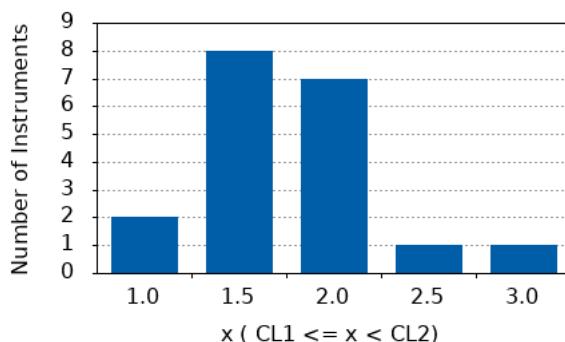
AFIS Dust Count, cnt/g



AFIS Dust Size, µm



AFIS V.F.M., %



A joint venture between



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