

RUNDTEST

STOFFEIGENSCHAFTEN

FABRIC PROPERTIES

3

AUSWERTUNG / EVALUATION

TEST MATERIAL

<u>Sample 1</u>	<u>Sample 2</u>
Lining - Woven fabric	Interlock - Knitted fabric
100% PES	100% CO
128 g/m²	140 g/m²
Width 149 cm	Width 176 cm
off white	dark blue

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ANMERKUNG

Verschiedentlich zeigen einzelne Resultate eines Labors eine unerwartet hohe Abweichung zu Resultaten anderer Labors. Solche Resultate beeinflussen die Mittelwert-Berechnung teilweise sehr stark. Um den Mittelwert nicht zu verfälschen, werden die Resultate auf ihre Abweichung zum Mittelwert überprüft.

Resultate von stetigen Merkmalen (Seite 3 bis 23), welche bei einer ersten Berechnung des Mittelwertes ausserhalb des Bereiches von $\pm 2s$ liegen, sowie Werte mit einer Abweichung >1 Note (Seite 24 bis 31) werden mit "x" gekennzeichnet. Diese markierten Resultate sind bei der Berechnung der statistischen Kenndaten nicht berücksichtigt, werden der Vollständigkeit halber aber trotzdem aufgeführt.

Resultate, die sich statistisch nicht sinnvoll auswerten lassen (z.B. >200) werden in der Auswertung ebenfalls mit einem "x" gekennzeichnet.

Resultate von stetigen Merkmalen (Seite 3 bis 23), welche nach der Berechnung des in der Tabelle angegebenen Mittelwertes ausserhalb des Bereiches von $\pm 1.5s$ liegen, werden mit "o" markiert.

Als Kontrollgrenze wurde der Bereich von $\pm 1.5s$ gewählt, da die häufig verwendete Kontrollgrenze von $\pm 1.0s$ nach unseren Erfahrungen normale Schwankungen in Flächengebilden nicht genügend berücksichtigt.

Auf der Seite 24 bis 31 sind nebst dem Mittelwert und der Standardabweichung auch der Median angegeben. Der Median ist die Zahl die in der Mitte einer nach Grösse sortierter Zahlenreihe liegt, d.h. die eine Hälfte der Zahlen hat Werte die kleiner oder gleich sind als der Median und die andere Hälfte hat Werte die grösser oder gleich sind als der Median.

In den vorliegenden Graphiken auf Seite 5 bis 23 ist die Kontrollgrenze $1s$ mittels durchgehender Linie, der Bereich $1.5s$ mit gestrichelter Linie und bei den Graphiken auf Seite 25 bis 30 der Mittelwert (\emptyset) mittels durchgehender Linie gekennzeichnet.

REMARKS

Sometimes single results of a lab show an unusual high standard deviation compared to the results of other labs. Such results may affect the calculation of the average value to a large extent. To avoid a falsification of the average value, the results are checked against their deviation to the average value.

Results of continuous criteria (page 3 to 23), from which the first calculated average value exceeds the range of $\pm 2s$, and values with a deviation >1 grade (page 24 - 31) are being marked with an "x" in the evaluation. These marked results are not taken into consideration for the calculation of statistical values. They are only listed for the sake of completeness.

Results that cannot be used for statistical calculations (e.g. >200) are also marked in the evaluation with an "x".

Results of continuous criteria (page 3 to 23), from which the calculated average value listed in the table exceeds the range of $\pm 1.5s$, are marked with "o".

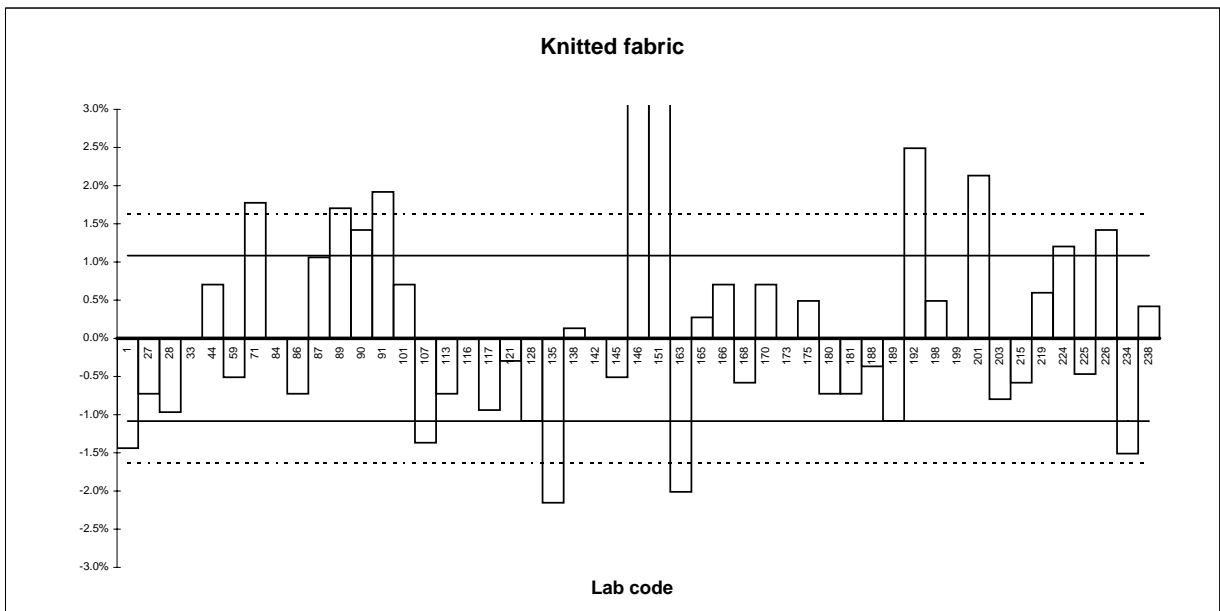
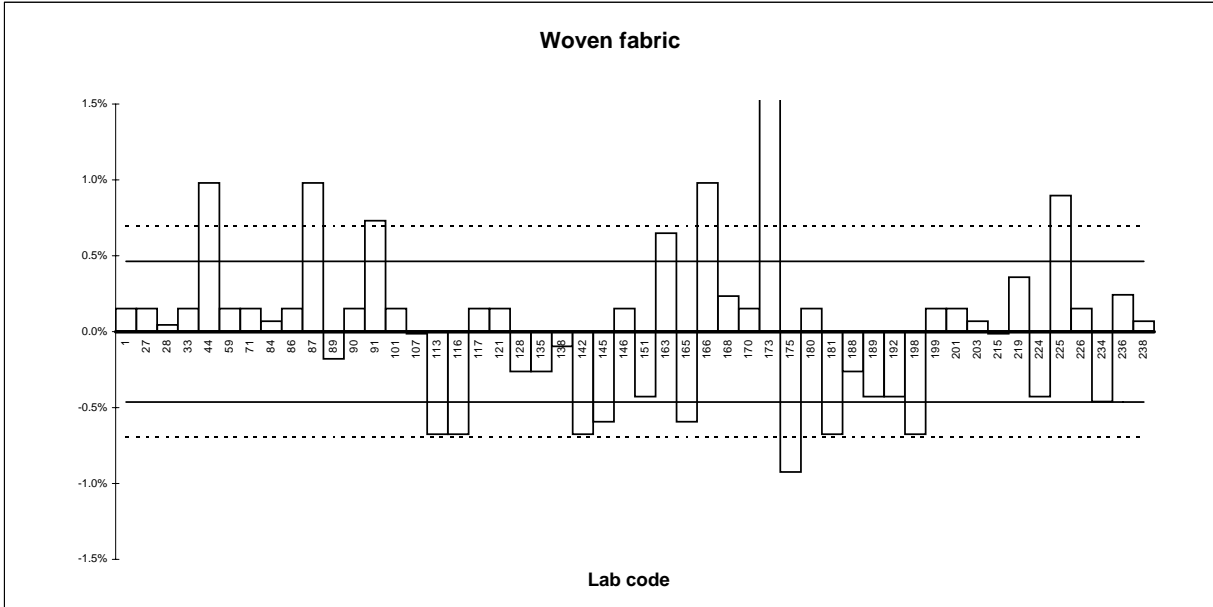
The control limit value of $\pm 1.5s$ was chosen, because the usual applied control limit of $\pm 1.0s$, according to our long time experience, was too small and did not entirely take the normal variations within fabrics into consideration.

On page 24 to 31 is, besides the mean value and standard deviation, also the median value indicated. The median is the figure in the middle of a range of figures which are sorted according to their size, i.e. half of the figures have values which are smaller or even to the median and the other half of the figures have values which are larger or even to the median.

In the existing graphics on page 5 to 23 the control limit value $1s$ is characterized with a continuous line, the range $1.5s$ with a broken line and in the graphics on page 25 to 30 the average value (\emptyset) with a continuous line.

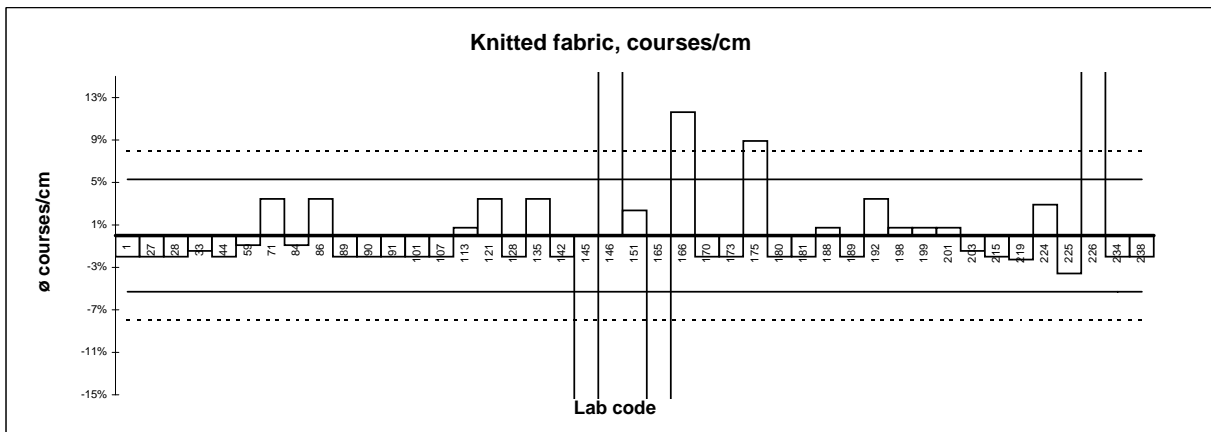
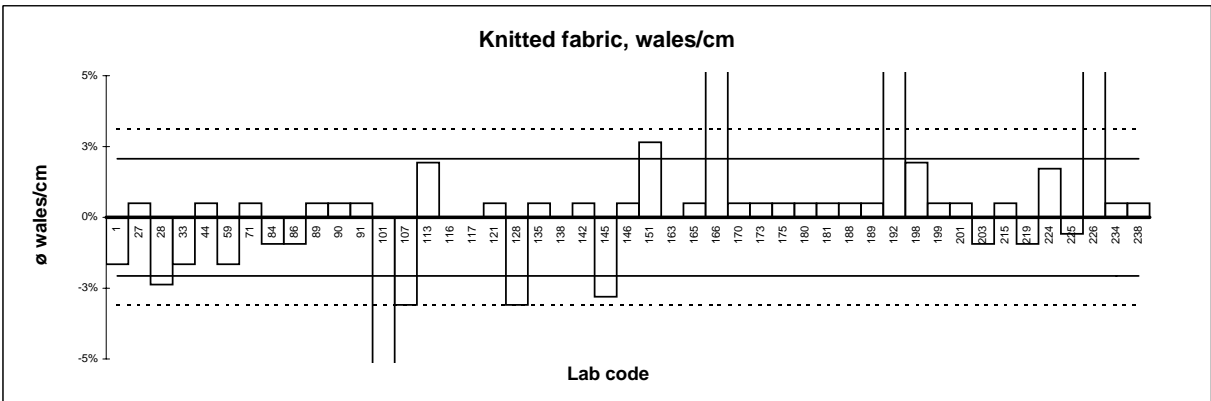
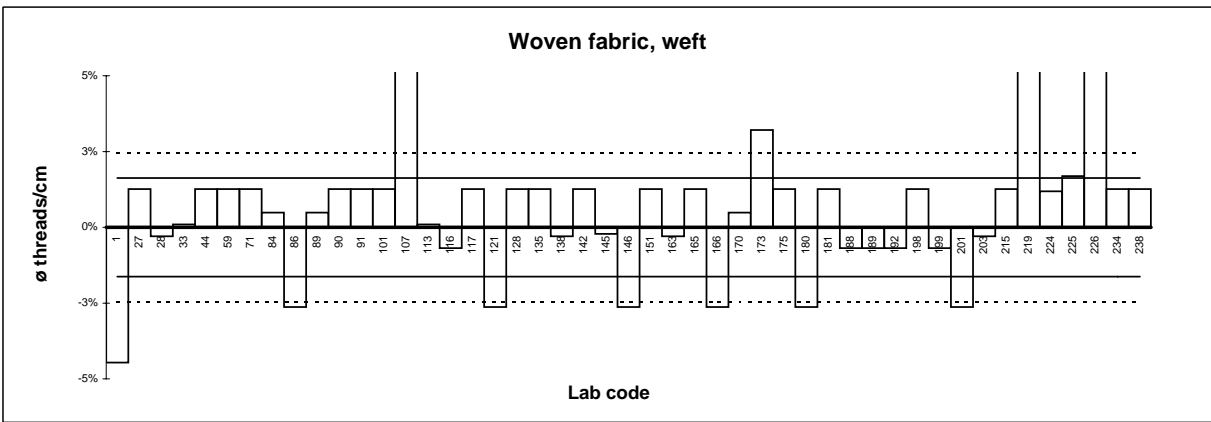
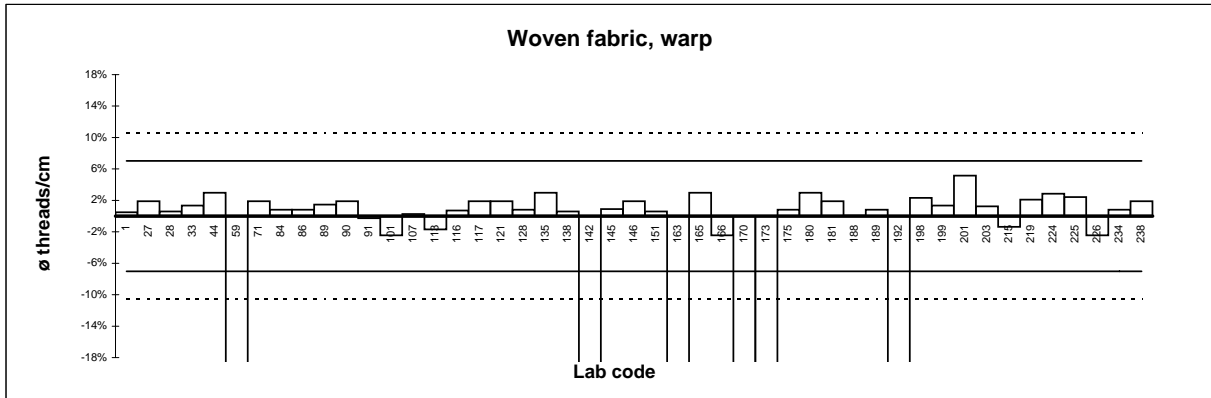
Weight of fabric							
Lab Code	Testing equipment	Standard applied	No. of tests	Woven fabric		Knitted fabric	
				ø g/m ²	CV (%)	ø g/m ²	CV (%)
1	Cutter & balance	EN 12127	5	121.00	0.32	138.00	0.51
27	Mettler Toledo	EN 12127	5	121.00	0.11	139.00	0.72
28	Sartorius	EN 12127	5	120.87	0.30	138.66	1.09
33	Sartorius	BF G07 - 150	5	121.00	0.12	140.00	0.24
44	Cutter & Mettler Toledo Balance	EN 12127	10	o 122.00	0.10	141.00	0.70
59	Balance	EN 12127	5	121.00	0.40	139.30	1.60
71	Sartorius	EN 12127	5	121.00	0.37	o 142.50	1.66
84	?	EN 12127	5	120.90	0.30	140.00	1.60
86	Press cutter & balance	EN 12127:1998	5	121.00	0.50	139.00	1.70
87	Scaltec	EN 12127	5	o 122.00	0.60	141.50	1.50
89	Balance	EN 12127	5	120.60		o 142.40	
90	Balance	EN 12127	3	121.00	0.30	142.00	0.40
91	?	EN 12127:1997	3	o 121.70	0.50	o 142.70	1.50
101	Mettler	EN 12127	5	121.00	0.20	141.00	1.70
107	Balance	EN 12127	5	120.80	0.40	138.10	1.10
113	Mettler	EN 12127	3	120.00	0.00	139.00	0.90
116	Balance	EN 12127	5	120.00	0.20	140.00	1.00
117	Balance	DIN 53854	3	121.00	0.80	138.70	2.30
121	Rundprobenschneider	EN 12127	5	121.00		139.60	
128	Balance	ISO 3801	5	120.50	0.35	138.50	0.70
135	Cutter & balance	ISO 3801	5	120.50	0.24	o 137.00	1.64
138	?	ISO 3801:1997	3	120.70	0.20	140.20	0.20
142	SDL sample cutter	EN 12127	5	120.00	0.30	140.00	0.90
145	Balance	ISO 3801	5	120.10		139.30	
146	Circular cutter	?	5	121.00	0.02	x 146.00	0.66
151	Cutting machine	UNI 5114:1998	3	120.30	0.10	x 145.20	1.50
163	Balance	BS EN 12127	5	121.60	0.30	o 137.20	1.38
165	Rundprobenschneider	EN 12127	5	120.10		140.40	
166	Cutter & balance	EN 12127	3	o 122.00	0.00	141.00	0.00
168	T610 / N266	EN 12127	3	121.10	0.08	139.20	1.29
170	?	EN 12127	5	121.00	0.20	141.00	1.10
173	Circular cutter / Balance	EN 12127	5	x 123.00	0.32	140.00	1.60
175	Analyser II - Mesdan	ASTM 3776	5	o 119.70	0.40	140.70	1.10
180	Cutter & balance	EN 12127	3	121.00	0.17	139.00	0.59
181	Cutter & balance	EN 12127	10	120.00	0.40	139.00	1.40
188	Sartorius	EN 12127	5	120.50	0.10	139.50	1.04
189	Cutter & balance	EN 12127	5	120.30	0.10	138.50	1.50
192	Adventurer Pro AR 3130	EN 12127	6	120.30	0.25	o 143.50	1.57
198	PL 200	EN 12127	3	120.00	0.00	140.70	1.09
199	Sartorius	EN 12127	5	121.00	0.50	140.00	1.00
201	Mettler Toledo	?	3	121.00	0.70	o 143.00	1.80
203	Sartorius	EN 12127	5	120.90	0.45	138.90	1.76
215	Cutter & balance	ISO 3801	5	120.80	0.31	139.20	2.60
219	Gibertini	EN 12127	10	121.25	0.25	140.85	0.99
224	Circular Cutter	ASTM 3776-96	4	120.30	0.50	141.70	0.50
225	Circular cutter / Balance	ISO 3801	3	o 121.90	0.08	139.36	1.48
226	Circular cutter / Balance	ISO 3801	5	121.00		142.00	
234	James H.Heal	BS 2471	5	120.26	0.14	137.90	0.72
236	Sartorius	EN 12127	5	121.11	0.27		
238	Cutter & balance	ISO 3801	5	120.90	0.50	140.60	0.57
n				49		47	
ø				120.82		140.01	
s				0.56		1.52	
CV %				0.46		1.08	
s²				0.17		3.39	
s_L²				0.30		1.42	
s_R²				0.47		4.80	
r				1.14		5.15	
R				1.91		6.14	

Weight of fabric



Construction of fabric								
Lab Code	Testing equipment	Standard applied for...		No. of tests	Woven fabric		Knitted fabric	
		Woven fabric	Knitted fabric		Warp ø threads/cm	Weft ø threads/cm	ø wales/cm	ø courses/cm
1	Manually	SN 198 452	SN 198 452	3	92.7	o 24.5	13.7	18.0
27	Manually	EN 1049-2	EN 14971	5	94.0	o 26.0	14.0	18.0
28	Thread counter	EN 1049	EN 1049	5	92.8	25.6	13.6	18.0
33	Reglet étaloné	EN 1049-2	EN 14971	5	93.5	25.7	13.7	18.1
44		ISO7211-2	BS 5441	20	95.0	26.0	14.0	18.0
59	Manually	?	?	5	x 38.0	26.0	13.7	18.2
71	Stereomikroskop	EN 1049-2	EN 14971	5	94.0	26.0	14.0	19.0
84	?	EN 1049-2	MSL 3489-4	5	93.0	25.8	13.8	18.2
86	Ruler	EN 1049-2	BS 5441	5	93.0	o 25.0	13.8	19.0
89	Fadenzähler Leitz	EN 1049-2	EN 14971	5	93.6	25.8	14.0	18.0
90	?	EN 1049-2A	EN 1049-2C	3	94.0	26.0	14.0	18.0
91	Thread counter	EN 1049-2A	EN 1049-2C	6	92.0	26.0	14.0	18.0
101	?	EN 1049	BS 5441	5	90.0	26.0	o 13.0	18.0
107	Fadenzähler	EN 1049	?	5	92.5	x 51.0	13.5	18.0
113	Fadenzähler Leitz	EN 1049-2	EN 14971	3	90.7	25.7	14.2	18.5
116	?	EN 1049-2	?	5	92.9	25.5		
117	?	EN 1049-2	?	3	94.0	26.0		
121	Thread counter	EN 1049-2A	EN 14971	5	94.0	o 25.0	14.0	19.0
128	Piece Glasses	EN 1049-2:2000	?	10	93.0	26.0	13.5	18.0
135	Magnifier	EN - 1049-2	?	5	95.0	26.0	14.0	19.0
138	?	?	?	5	92.8	25.6		
142	SDL Pick counter	EN 1049-2	EN 1049-2	5	x 37.0	26.0	14.0	18.0
145	TEXTTEST FX 3250	ISO7211-2	?	5	93.1	25.6	13.5	x 13.6
146	2 needles	ISO7211-2	?	5	94.0	o 25.0	14.0	o 22.0
151	Thread counter	EN 1049-2	?	5	92.8	26.0	14.3	18.8
163	Thread counter	EN 1049-2	?	3	x 37.0	25.6		
165	Thread counter	?	?	2	95.0	26.0	14.0	o 15.0
166	Auszähladel	EN 1049-2	DIN 53883	3	90.0	o 25.0	x 16.5	o 20.5
170		EN 1049-2	?	5	o 55.8	25.8	14.0	18.0
173	Manually	EN 1049-2	EN 14971	5	x 37.5	o 26.5	14.0	18.0
175	Magnifier	ASTM 3775	ASTM 3887	5	93.0	26.0	14.0	o 20.0
180	Thread counter	EN 1049-2	DIN 53883	5	95.0	o 25.0	14.0	18.0
181	Thread counter	EN 1049-2	DIN 53883	3	94.0	26.0	14.0	18.0
188	Manually	EN 1049-2	?	3	92.3	25.5	14.0	18.5
189	Manually	Internal Method	Internal Method	3	93.0	25.5	14.0	18.0
192	?	EN 1049-2	?	6	x 38.0	25.5	o 15.0	19.0
198	?	?	?	3	94.4	26.0	14.2	18.5
199	Thread counter	EN 1049-2	EN 14971	5	93.5	25.5	14.0	18.5
201	Manually	SN 198 452	?	2	97.0	o 25.0	14.0	18.5
203	Thread counter	EN 1049-2	EN 14971	3	93.4	25.6	13.8	18.1
215	Magnifier	ISO7211-2	DIN 53883	5	91.0	26.0	14.0	18.0
219	Magnifying glass	EN 1049-2	EN 1049-2	10	94.2	o 27.3	13.8	18.0
224	Magnifying glass	ASTM 3775-3a	BS 5441:1988	4	94.9	26.0	14.2	18.9
225	Manually	ISO7211-2	ISO7211-2	3	94.5	26.1	13.9	17.7
226	Manually	Internal Method	Internal Method	3	90.0	o 27.0	x 17.0	x 32.0
234	Magnifying glass	BS EN 1049-2	BS 5441	3	93.0	26.0	14.0	18.0
238	Magnifying glass	ISO7211-2	ISO 7211-2	5	94.0	26.0	14.0	18.0
n					42	46	41	41
Ø					92.3	25.7	13.9	18.4
s					6.49	0.42	0.29	1.0
CV %					7.03	1.63	2.07	5.3

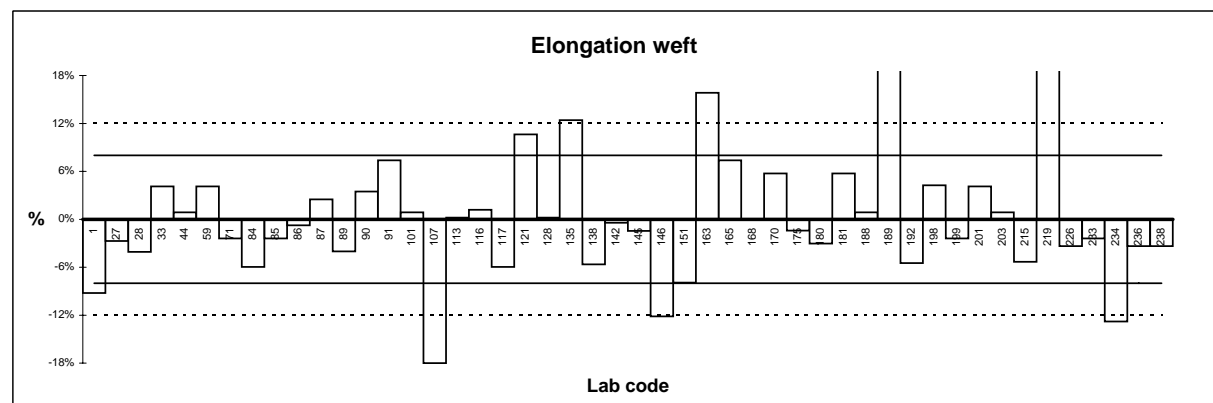
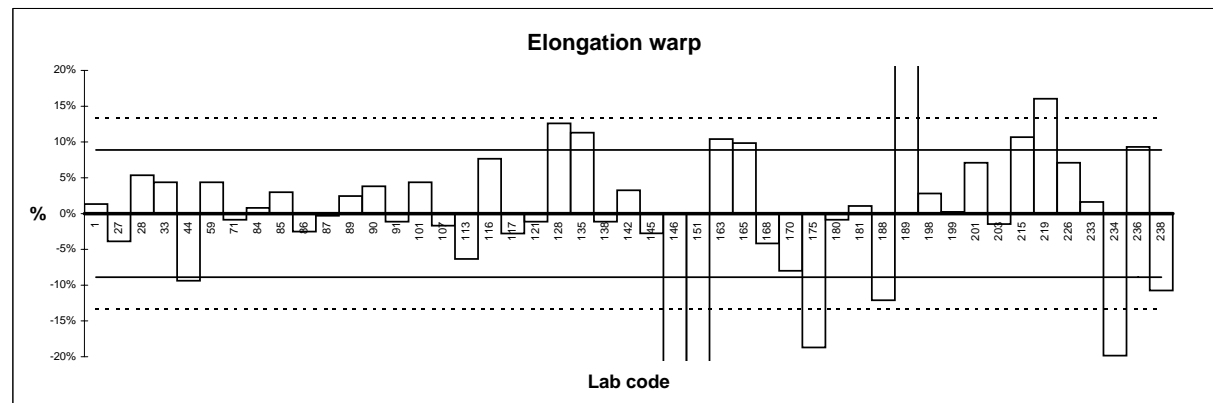
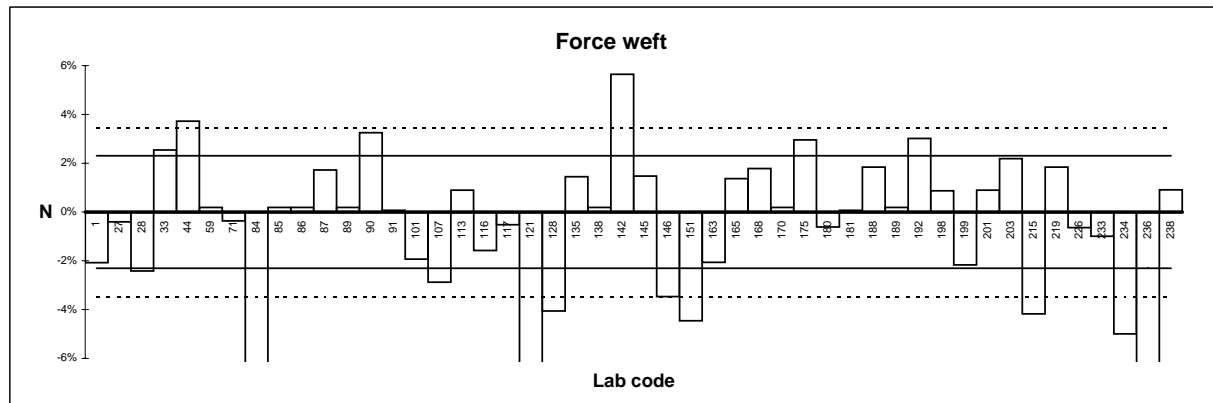
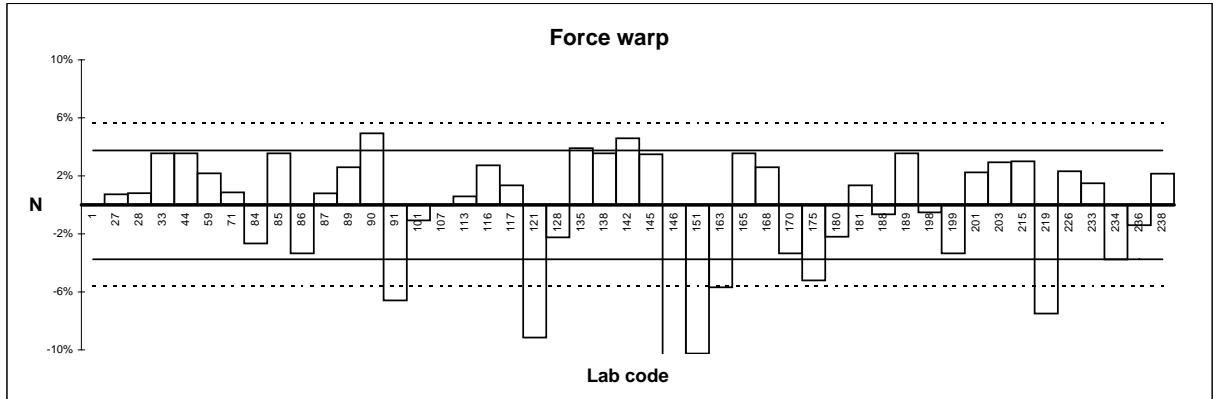
Construction of fabric



**Tensile properties strip method
ISO 13934-1**

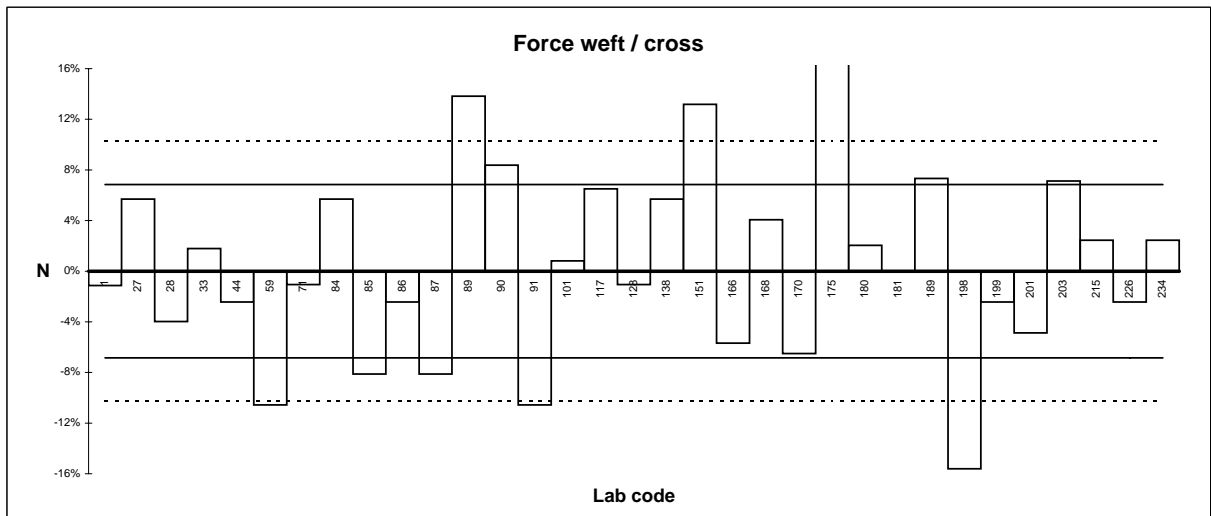
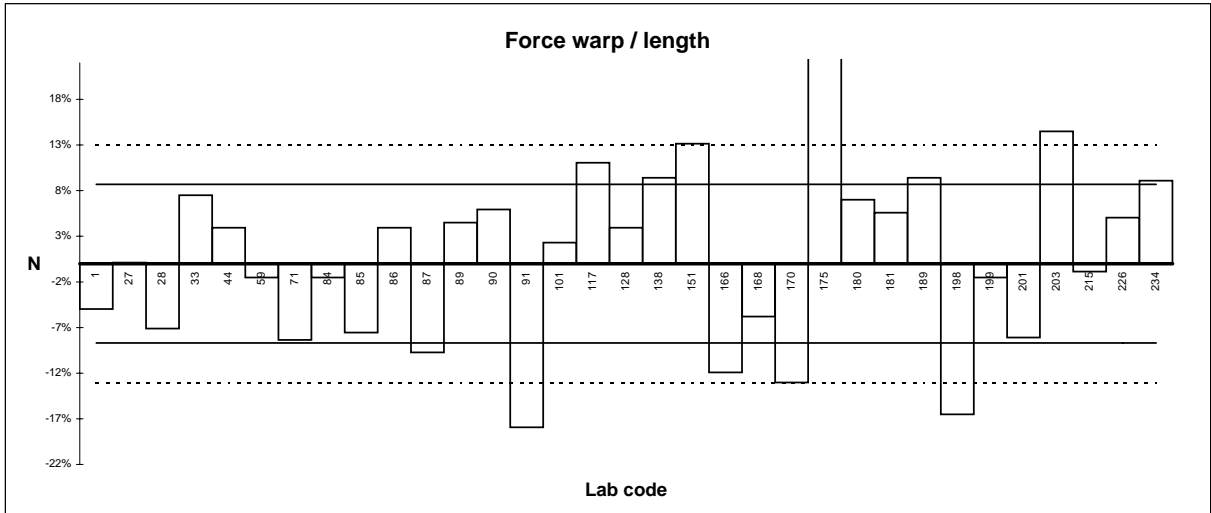
Lab Code	Testing equipment	No. of tests	Pre-tension [N]	Testing length [mm]	Testing speed [mm/min]	Force warp ø N	CV%	Force weft ø N	CV%	Elongation warp %	CV%	Elongation weft %	CV%
1	Zwick Z010	5	2	200	100	1448.50	0.42	830.80	1.04	36.90	4.21	27.90	2.03
27	Zwick UPM 1455	5	2	200	100	1459.00	3.16	845.00	1.23	35.00	9.94	29.90	2.52
28	Zwick 1445	5	2	200	100	1460.10	1.44	827.90	1.14	38.36	6.04	29.48	1.78
33	Dynamometer Hounsfield	5	2	200	100	1500.00	0.50	870.00	0.50	38.00	2.10	32.00	0.40
44	Hounsfield	10	2	200	100	1500.00	1.40	o 880.00	1.80	33.00	3.10	31.00	2.20
59	Autograph	5	2	200	100	1480.00	0.50	850.00	0.80	38.00	3.70	32.00	1.30
71	Zwick Z010	5	2	200	100	1461.00	1.19	845.30	2.07	36.10	6.05	30.00	4.40
84	Instron 4301	5	2	200	100	1410.00	3.70	x 760.00	1.30	36.70	11.20	28.90	1.60
85	Instron CRE	5	2	200	100	1500.00	1.00	850.00	1.00	37.50	4.00	30.00	4.00
86	Hounsfield	5	2	200	100	1400.00	3.30	850.00	1.60	35.50	5.80	30.50	4.00
87	Zwick Z020	5		200	100	1460.00	2.20	863.00	0.50	36.30	9.70	31.50	0.70
89	Zwick 1456	5	2	200	100	1486.00	1.20	850.00	1.48	37.30	3.34	29.50	3.64
90	Titan	5		200	100	1520.00	0.45	876.00	1.36	37.80	5.67	31.80	1.67
91	Instron	10	2	200	100	o 1353.00	1.00	849.00	2.90	36.00	5.80	33.00	4.40
101	Titan JH	5	2	200	100	1433.00	4.20	832.00	0.70	38.00	4.20	31.00	0.00
107	Shimadzu	5	2	200	100	1448.00	1.90	824.00	3.00	35.80	5.60	o 25.20	6.30
113	Zwicky 1120	5	2	200	100	1457.00	1.46	856.00	1.35	34.10	3.74	30.80	0.41
116	Micro 350/10AX	5	2	200	100	1488.00	2.00	835.00	2.30	39.20	5.90	31.10	4.40
117	Instron 4465	5		200	100	1468.00	4.20	844.00	0.30	35.40	11.30	28.90	0.90
121	Zwick	5	2	100	100	o 1316.00		x 752.00		36.00		34.00	
128	Hounsfield	5	2	200	100	1416.00	0.75	o 814.00	1.05	41.00	1.78	30.80	1.81
135	Instron	5	2	200	100	1505.00	1.39	860.70	0.73	40.53	3.25	o 34.55	3.23
138	CRE	5	2	200	100	1500.00	1.90	850.00	0.70	36.00	7.80	29.00	0.90
142	SDL UTT	5	2	200	100	1515.00	1.10	o 896.30	0.20	37.60	5.10	30.60	0.30
145	Instron	5	3	200	100	1498.95		860.88		35.41		30.29	
146	Zwick 1455	5	2	200	100	x 1045.00	15.30	o 819.00	1.60	x 16.00	23.80	o 27.00	8.40
151	Mesdan	5	2	200	100	o 1300.00	3.00	o 810.60	1.00	o 25.10	1.50	28.30	1.80
163	Loyds EZ20	10	2	200	100	o 1366.20	4.07	830.90	2.00	40.20	1.41	o 35.60	2.41
165	Zwick Z010	5	2	200	50	1500.00		860.00		40.00		33.00	
168	F427/3	5	2	200	100	1486.00	1.82	863.50	0.99	34.89	7.87	30.72	1.24
170	Instron 4301	5		200	100	1400.00	0.70	850.00	2.90	33.50	3.10	32.50	0.90
175	Tensolab-Mesdan	5	0	200	250	1373.00	3.00	873.50	2.00	o 29.60	3.50	30.30	2.50
180	Zwick	5	2	200	100	1416.60	2.10	843.20	1.26	36.10	9.40	29.80	3.40
181	Zwick Z005	5	2	200	100	1468.00	2.10	849.00	1.90	36.80	6.10	32.50	5.10
188	PT-250N-2	5	2	200	100	1439.00	1.29	864.00	0.63	32.00	4.42	31.00	1.14
189	Hounsfield	5	2	200	100	1500.00	1.00	850.00	1.20	x 81.00	3.40	x 63.00	4.50
192	Zwick BZ 2.5	6	2	200	100		1.17	874.00	4.70			29.05	3.24
198	Zwick 1445	5	2	200	176/149	1441.00	1.17	855.80	0.66	37.43	7.90	32.04	1.78
199	Hounsfield	5	2	200	100	1400.00	4.30	830.00	1.30	36.50	14.90	30.00	3.50
201	Zwick 1455	5	3	200	100	1481.00	3.10	856.00	2.30	39.00	10.20	32.00	7.50
203	Zwick 1455	5	2	200	100	1491.00	1.84	867.00	0.68	35.88	6.08	31.00	2.20
215	Instron 4465	5	5	200	100	1492.00	1.92	o 813.00	1.23	40.30	2.56	29.10	0.65
219	Ruler / Mag. Glass	10	2	200	250	o 1340.00	4.96	864.00	4.12	o 42.25	15.04	o 40.95	4.17
226	Titan	5	2	200	100	1482.00		843.00		39.00		29.70	
233	Z1120	5	2	200	100	1470.00	0.82	840.00	0.46	37.00	3.33	30.00	0.71
234	Hounsfield H10KS	5	2	200	100	1394.00	2.55	o 806.00	4.16	o 29.19	6.16	o 26.80	6.94
236	Zwick Z010	4	2	200	100	1428.10	1.90	x 725.90	2.60	39.80	2.80	29.70	1.50
238	Zwick Z050	5	2	200	100	1479.70	0.74	856.10	1.00	32.50	3.40	29.70	2.40
n						46		45		45		47	
Ø						1448.48		848.41		36.41		30.73	
s						54.28		19.59		3.24		2.46	
CV %						3.75		2.31		8.89		8.00	
s_r²						1203.74		293.49		6.96		1.08	
s_L²						2843.77		347.72		10.01		8.31	
s_R²						4047.52		641.21		16.98		9.39	
r						97.15		47.97		7.39		2.91	
R						178.14		70.90		11.54		8.58	

Tensile properties strip method
ISO 13934-1



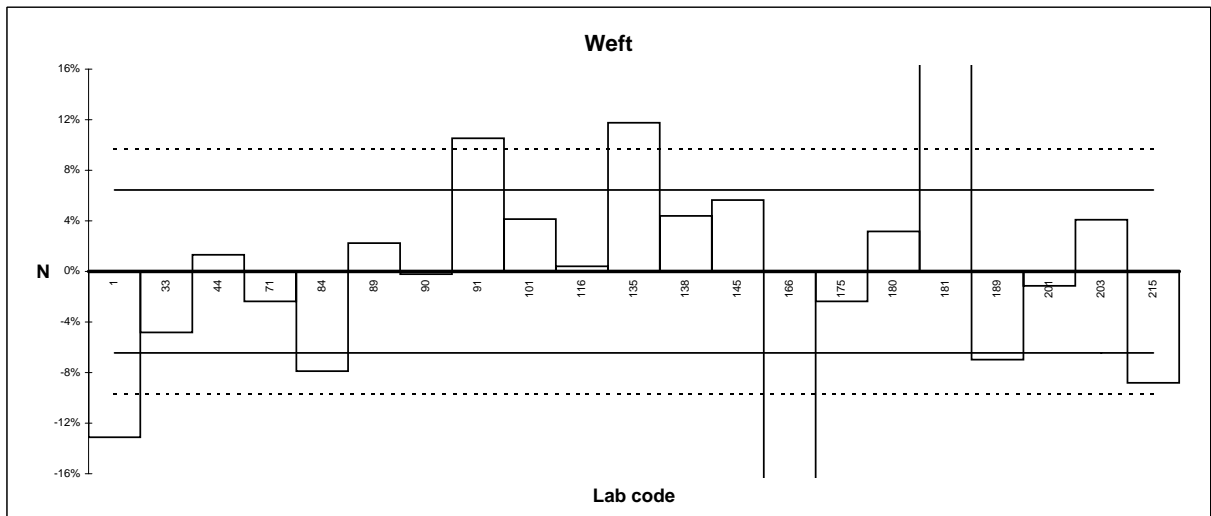
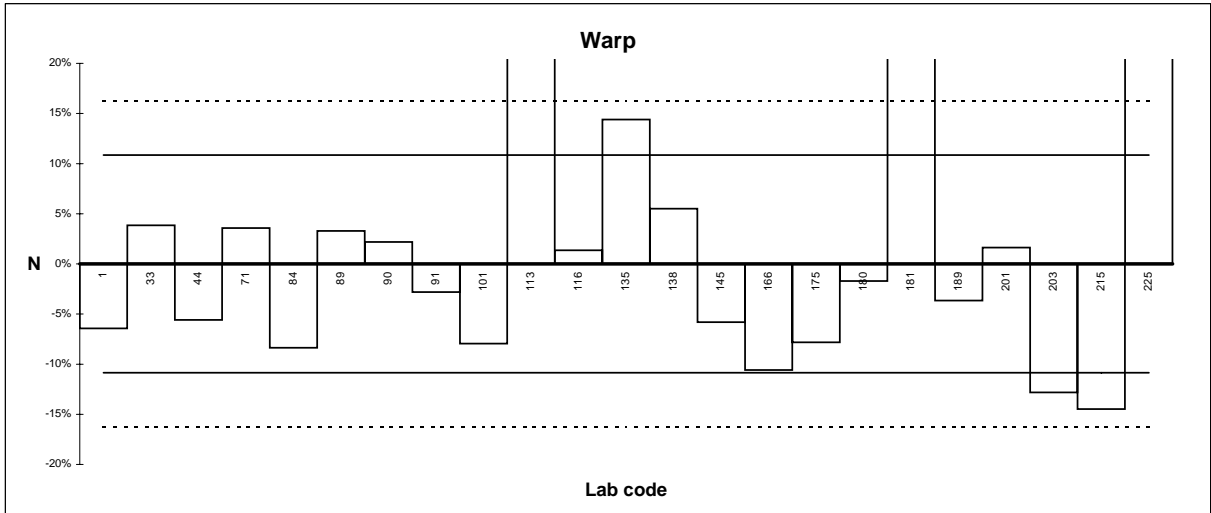
Tensile properties grab method ISO 13934-2									
Lab Code	Testing equipment	No. of tests	Pre-tension [N]	Testing length [mm]	Testing speed [mm/min]	Force warp/length ø N	CV%	Force weft/cross ø N	CV%
1	Zwick Z010	5		75	50	173.70	10.72	121.60	3.88
27	Zwick UPM 1455	5	0	100	50	183.00	7.09	130.00	3.78
28	Zwick 1445	5	0	100	50	169.80	7.26	118.10	1.80
33	Dynamometer Hounsfield	5	0	100	50	196.50	8.33	125.20	6.27
44	Hounsfield	10	0	100	50	190.00	10.50	120.00	5.20
59	Autograph	5		100	50	180.00	4.10	o 110.00	4.30
71	Zwick Z010	5	0	100	50	167.50	3.96	121.70	6.90
84	Instron 4301	5		100	50	180.00	10.40	130.00	6.90
85	Instron CRE	5	0	100	50	169.00	6.00	113.00	5.00
86	Hounsfield	5		100	50	190.00	5.00	120.00	4.10
87	Z020	5		100	50	165.00	8.70	113.00	4.50
89	Zwick 1456	5		100	50	191.00	5.10	o 140.00	6.30
90	Titan	5	0	100	50	193.64	0.62	133.29	5.16
91	Instron	10		100	50	o 150.00	6.80	o 110.00	7.80
101	Titan JHH	5		75	100	187.00	5.70	124.00	6.30
117	Instron 4465	3		100	50	203.00	4.30	131.00	1.50
128	Hounsfield	5	2	100	100	190.00	5.29	121.70	5.04
138	CRE	5	2	75	50	200.00	4.20	130.00	7.20
151	Hounsfield	5		100	50	o 206.80	2.60	o 139.20	3.90
166	Statigraph 4	5	2	75	50	161.00	7.40	116.00	3.70
168	F427/3	5	2	100	50	172.20	12.07	128.00	4.83
170	Instron 4301	5		100	50	159.00	5.00	115.00	6.20
175	Tensolab- Mesdan	5	0	75	50	x 434.10	4.30	x 348.30	4.10
180	Zwick	5	1	100	50	195.60	3.80	125.50	6.40
181	Zwick Z005	5	2	100	50	193.00	8.50	123.00	2.90
189	Hounsfield	5	0	100	50	200.00	4.00	132.00	4.00
198	Zwick 1445	5	2	100	50	o 152.60	9.76	o 103.80	4.14
199	Hounsfield	5	0	100	50	180.00	2.40	120.00	1.40
201	Zwick Z010	5	3	75	50	168.00	2.70	117.00	5.60
203	Zwick 1455	5	0	100	50	o 209.27	5.76	131.76	7.24
215	Instron 4465	5	0	75	50	181.20	8.21	126.00	4.74
226	Titan	5	2	100	50	192.00		120.00	
234	Hounsfield H10KS	5	2	100	50	199.40	3.88	126.00	4.73
n						32		32	
Ø						182.79		123.00	
s						15.89		8.43	
CV %						8.69		6.85	
s_r²						154.94		42.83	
s_L²						244.31		65.80	
s_R²						399.25		108.64	
r						34.85		18.33	
R						55.95		29.18	

Tensile properties grab method
ISO 13934-2



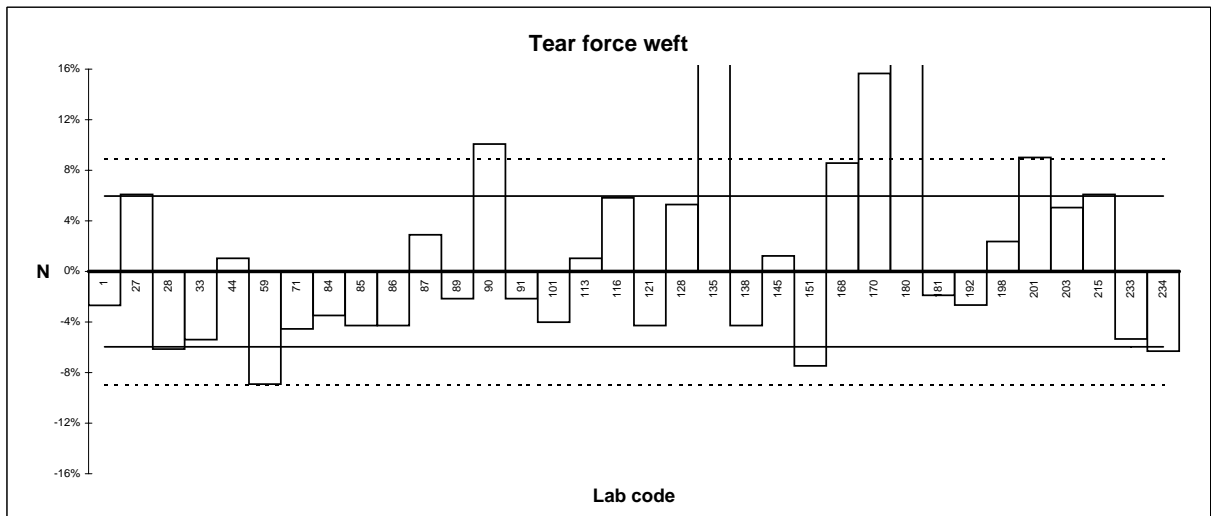
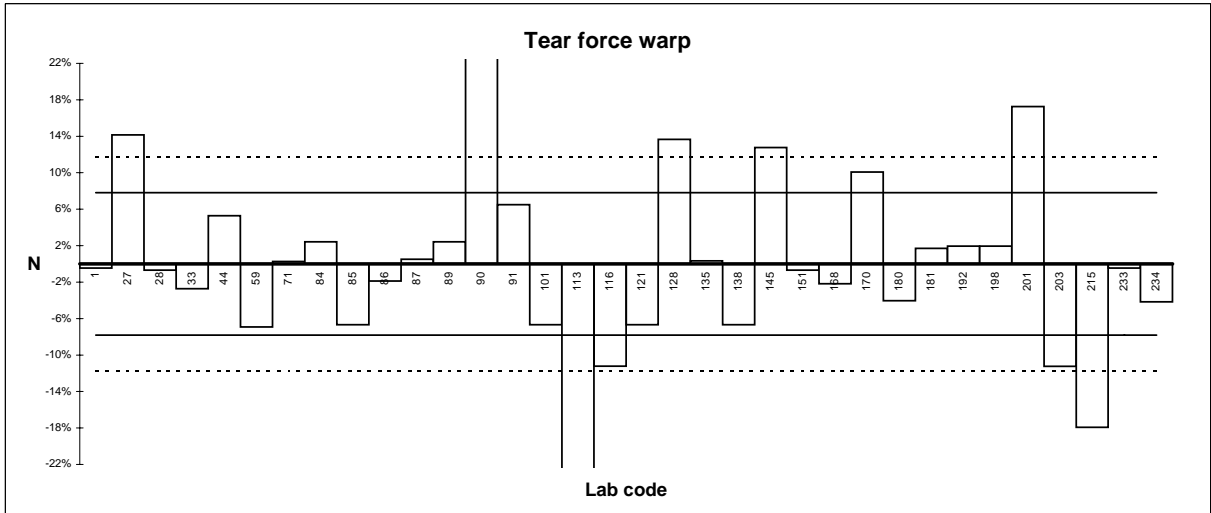
Tear force - Elmendorf method ISO 13937-1							
Lab Code	Testing equipment	No. of tests	Pendulum weight [cN]	Force warp $\bar{\sigma}$ N	CV%	Force weft $\bar{\sigma}$ N	CV%
1	Elmendorf	5	6800	33.70	3.77	o 28.30	2.41
33	Elmendorf	5	10000	37.40	9.88	31.00	3.13
44	Textest FX 3750	10	6700	34.00	5.90	33.00	3.80
71	Textest FX 3700	5	9600	37.30	3.28	31.80	5.39
84	Elmendorf	5	6400	33.00	5.20	30.00	4.40
89	Textest FX 3750	5	6800	37.20		33.30	
90	Textest FX 3750	5	13600	36.80	1.03	32.50	3.60
91	Textest	10	6800	35.00	7.50	o 36.00	1.90
101	Chomargy	5	6400	33.15	0.90	33.92	5.20
113	Lorenzen u. Wettre 09ED	5	6280	x 52.50	4.00		
116	Tearing strength tester	5	6400	36.50	8.80	32.70	1.40
135	Elmetear J. Heal	5	6524	41.20	3.14	o 36.40	7.60
138	Thwing-Albert 9153	5	6272	38.00	3.50	34.00	1.50
145	Textest FX 3750	5	6800	33.92		34.41	
166	Textest FX 3750	5	6800	32.20	4.20	x 26.40	3.40
175	Elmendorf Textest	5	32000	33.20	3.60	31.80	3.50
180	Elmendorf	5	6800	35.40	2.80	33.60	1.80
181	Elmendorf	5	960	o 44.40	8.60	x 39.30	2.60
189	Textest FX 3700	5	4200	34.70	6.00	30.30	3.40
201	Textest FX 3750	5	6800	36.60	3.40	32.20	1.80
203	Textest FX 3750	5	6800	31.40	6.54	33.90	8.66
215	Textest FX 3750	5	9600	30.80	5.85	29.70	12.10
225	Elmendorf Tear Tester	5	6278	o 46.44	2.17		
n				20		18	
$\bar{\sigma}$				36.01		32.57	
s				3.91		2.10	
CV %				10.86		6.44	
s_w^2				4.06		2.48	
s_L^2				14.64		4.43	
s_R^2				18.71		6.91	
r				5.64		4.41	
R				12.11		7.36	

Tear force - Elmendorf method
ISO 13937-1



Tear force - trouser-shape method ISO 13937-2						
Lab Code	Testing equipment	No. of tests	Force warp ø N	CV%	Force weft ø N	CV%
1	Zwick Z010	5	41.60	3.06	36.60	4.67
27	Zwick UPM 1455	5	o 47.70	6.99	39.90	2.36
28	Zwick 1445	5	41.50	2.66	35.30	5.63
33	Dynamometer Hounsfield	3	40.65	3.23	35.58	8.40
44	Hounsfield	10	44.00	10.50	38.00	3.10
59	Autograph	5	38.90	7.40	34.26	7.00
71	Zwick Z010	5	41.90	4.57	35.90	4.78
84	Instron 4301	5	42.80	6.80	36.30	4.00
85	Instron CRE	5	39.00	6.70	36.00	1.50
86	Hounsfield	5	41.00	4.90	36.00	5.40
87	Zwick Z020	5	42.00	8.20	38.70	7.10
89	Zwick 1456	5	42.80	5.90	36.80	7.00
90	Titan	5	x 52.20	4.37	o 41.40	2.26
91	Instron	10	44.50	8.30	36.80	3.90
101	Titan JH	5	39.00	3.70	36.10	3.10
113	Zwicky 1120		x 32.00	2.24	38.00	6.93
116	Micro 350/10AX	5	37.10	2.70	39.80	0.80
121	Zwick Z 2.5	5	39.00		36.00	
128	Hounsfield	5	o 47.50	5.50	39.60	3.50
135	Instron 4411	5	41.93	2.12	x 48.89	1.66
138	CRE	5	39.00	0.60	36.00	3.90
145	Instron	5	o 47.12		38.07	
151	Mesdan	5	41.50	1.90	34.80	2.20
168	F427/3	5	40.88	2.46	40.83	2.66
170	Instron	5	46.00	1.00	o 43.50	4.00
180	Zwick	5	40.10	3.20	x 45.10	4.40
181	Zwick Z005	5	42.50	1.50	36.90	3.10
192	Zwick BZ 2.5	6	42.60	4.68	36.61	5.58
198	Zwick 1445	5	42.60	4.46	38.50	5.95
201	Zwick Z010	5	o 49.00	6.60	o 41.00	9.30
203	Statigraph 4	5	37.09	6.73	39.51	5.09
215	Instron 4465	5	o 34.30	2.71	39.90	2.86
233	Z1120	5	41.60	5.33	35.60	3.03
234	Hounsfield H10KS	5	40.05	4.72	35.24	4.87
n			32		32	
Ø			41.79		37.61	
s			3.26		2.24	
CV %			7.81		5.96	
s_r²			6.06		3.14	
s_L²			8.74		4.47	
s_R²			14.80		7.61	
r			6.89		4.96	
R			10.77		7.72	

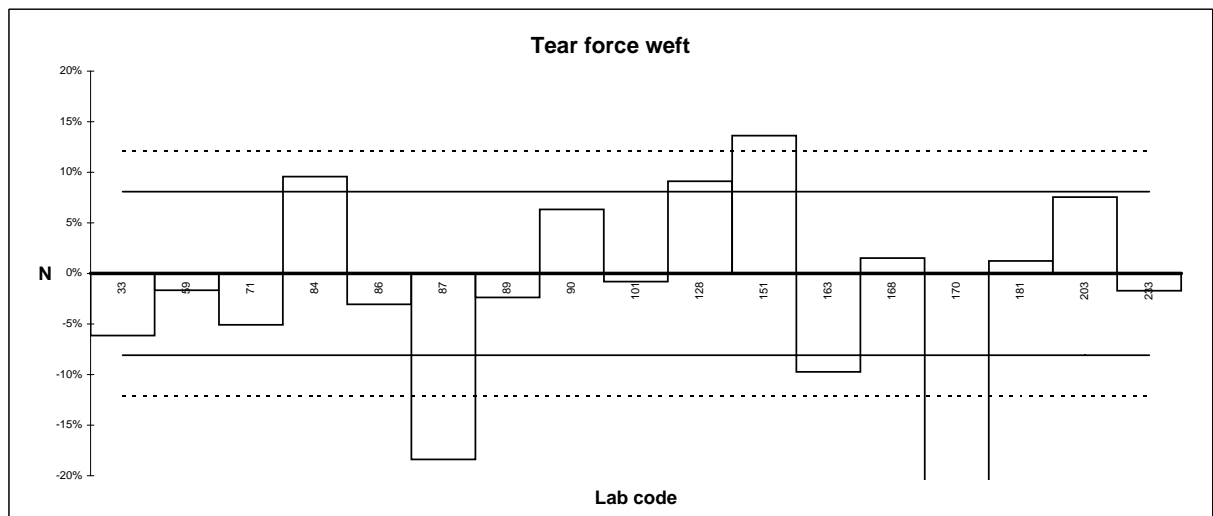
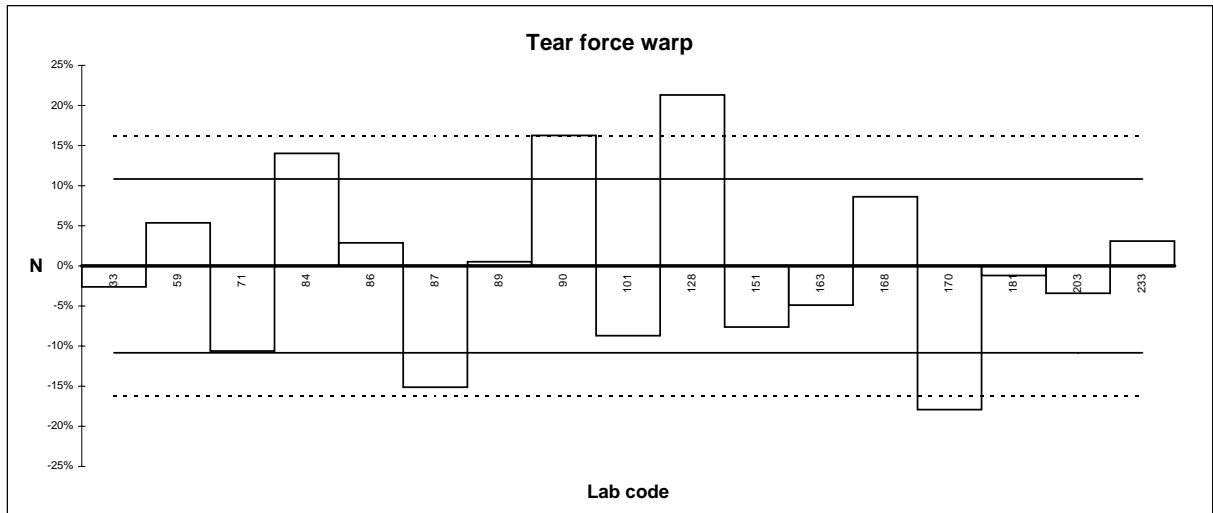
Tear force - trouser-shape method
ISO 13937-2



**Tear force - wing-shape method
ISO 13937-3**

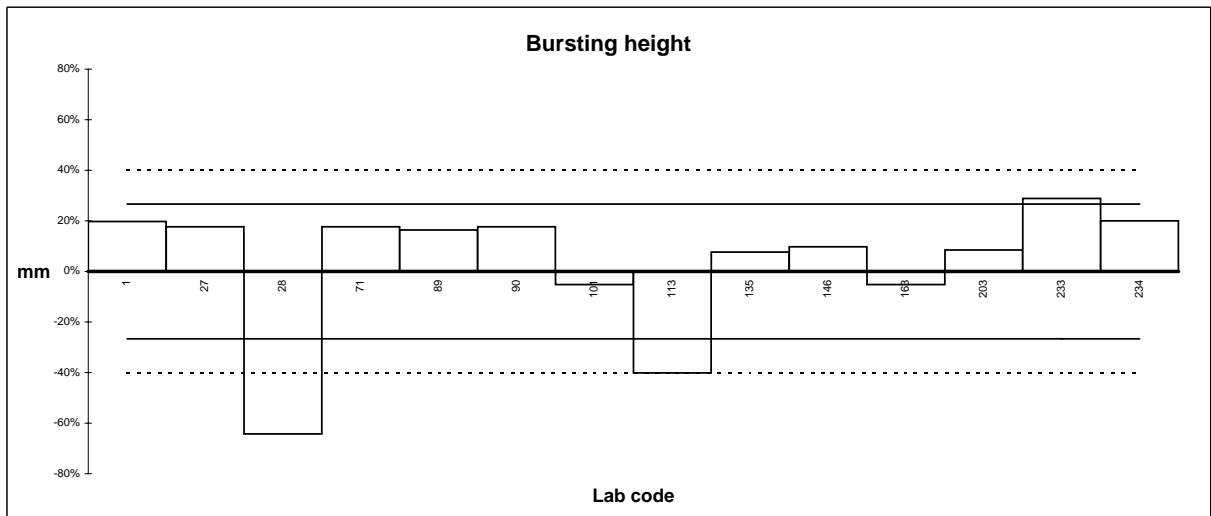
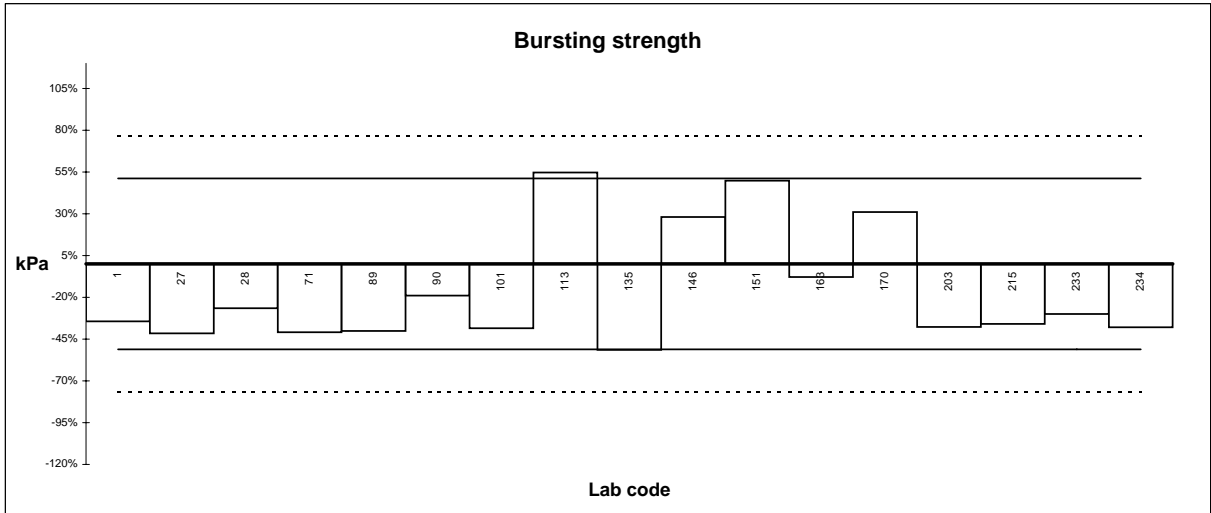
Lab Code	Testing equipment	No. of tests	Force warp ø N	CV%	Force weft ø N	CV%
33	Hounsfield	3	45.44	4.20	41.63	3.06
59	Autograph	5	49.16	2.00	43.62	9.90
71	Zwick Z010	5	41.70	1.82	42.10	2.32
84	Instron 4301	5	53.20	3.30	48.60	9.10
86	Hounsfield	5	48.00	6.20	43.00	1.00
87	Zwick Z020	5	39.60	4.40	o 36.20	10.50
89	Zwick 1456	5	46.90	9.60	43.30	3.30
90	Titan	5	o 54.24	6.69	47.16	2.30
101	Titan JH	5	42.60	3.50	44.00	2.90
128	Hounsfield	5	o 56.60	3.90	48.40	4.90
151	Mesdan	5	43.10	2.00	o 50.40	4.70
163	Loyds EZ20	10	44.38	3.40	40.04	0.50
168	F427/3	5	50.68	3.93	45.03	4.09
170	Instron	5	o 38.30	1.70	x 34.70	2.40
181	Zwick Z005	5	46.10	2.60	44.90	3.80
203	Statigraph 4	5	45.06	9.71	47.70	6.17
233	Z1120	5	48.10	8.00	43.60	3.21
n			17		16	
Ø			46.66		44.36	
s			5.05		3.58	
CV %			10.83		8.08	
s_w²			5.89		5.24	
s_L²			23.88		12.38	
s_R²			29.77		17.62	
r			6.79		6.41	
R			15.28		11.75	

Tear force - wing-shape method
ISO 13937-3



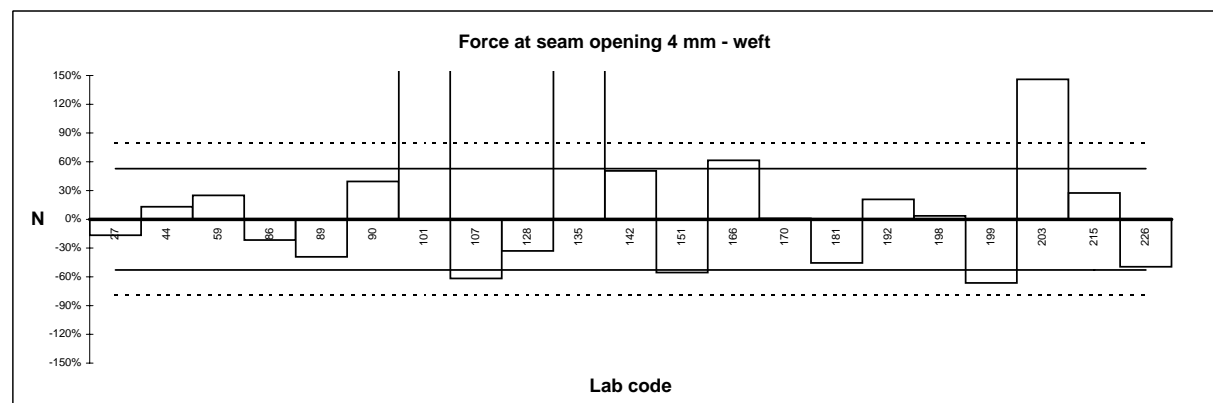
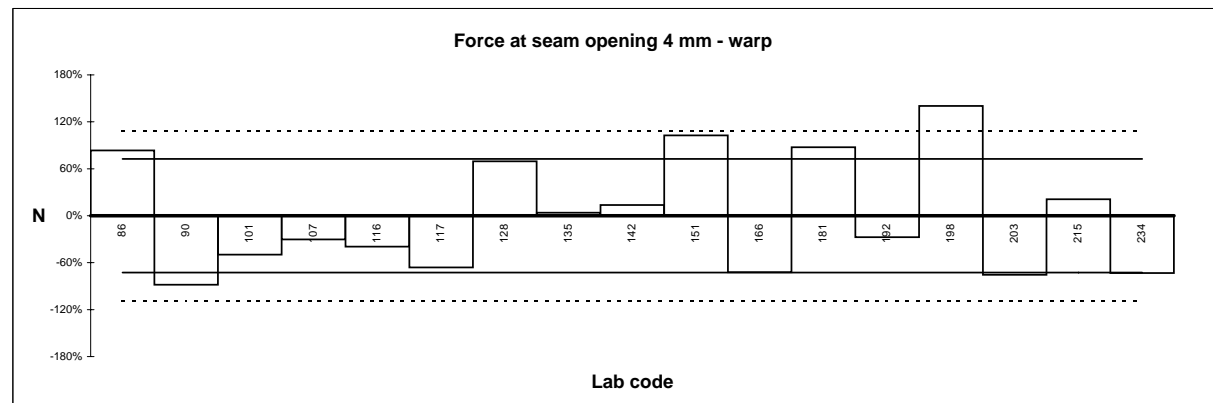
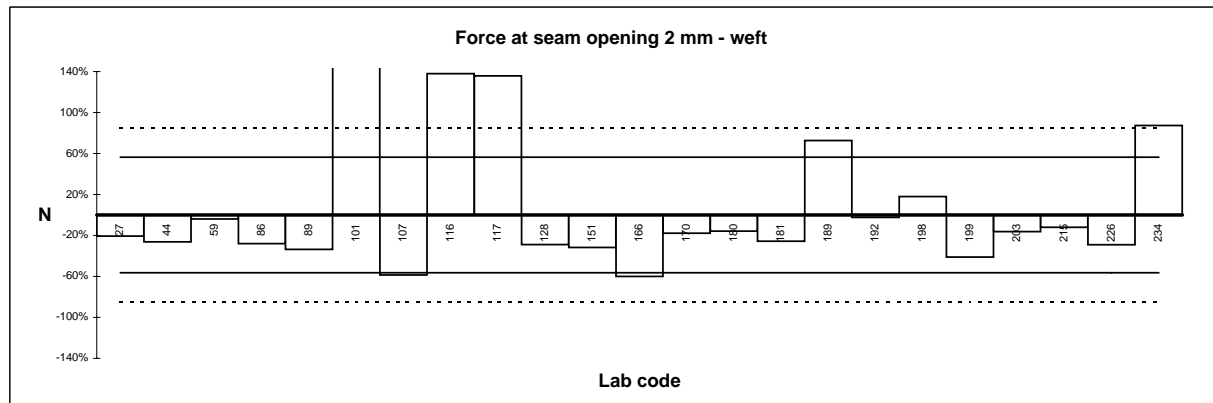
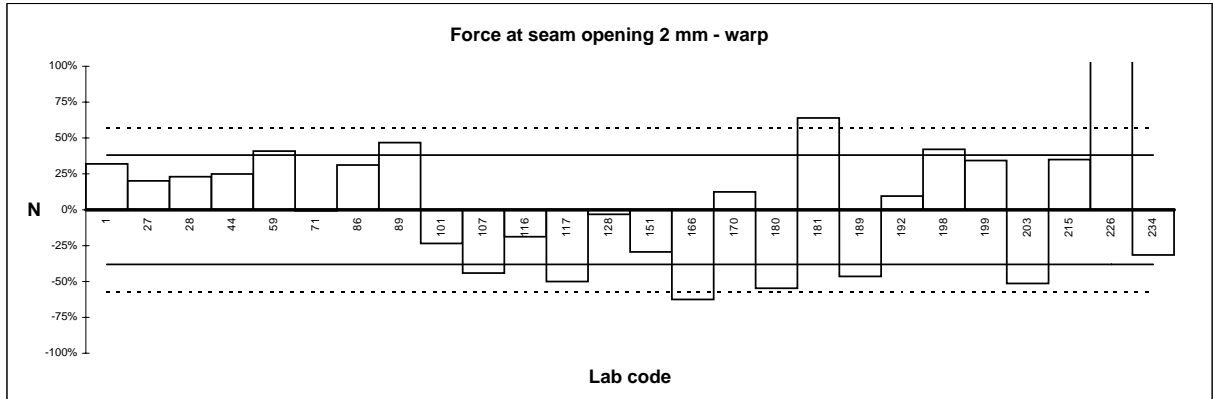
Bursting strength ISO 13938-2							
Lab Code	Testing equipment	No. of tests	test size [cm ²]	Bursting strength ø kPa	CV%	Bursting height ø mm	CV%
1	Frank 18824	5	50	187.60	5.26	28.80	1.51
27	Frank 18824	5	50	167.00	4.94	28.30	0.85
28	Frank	5	50	209.80	7.85	x 8.60	29.20
*44	Tru Burst	5	7	o 516.00	4.80	o 11.00	4.00
71	Tru Burst	5	50	168.90	6.13	28.30	4.01
89	Schröder BP30-E	5	50	171.00		28.00	
90	Tru Burst	5	50	231.60	1.45	28.30	2.13
101	Tru Burst	10	50	175.70	8.12	22.80	3.50
113	SDL	10	25	442.00	7.22	o 14.40	1.66
*116	Bursting Tester T-50	5	7	o 570.00	4.80	o 23.00	5.30
135	Tru Burst	5	50	138.80	28.40	25.90	1.98
*142	SDL F2000	5	7	o 566.00	5.40	o 10.90	0.80
146	Tru Burst	5	50	366.00	7.90	26.40	1.30
151	Scippiometro	5	50	428.00	2.60		
163	J. Heal Psi Burst	5	50	263.30	7.15	22.80	1.96
170	Aquari G / S	10	10	374.40	9.00		
203	Tru Burst 611	5	50	177.90	7.39	26.10	1.51
215	Messmer	10	50	183.00	3.48		
233	Berstdruckgerät	5	50	200.00	7.07	31.00	5.81
234	James H. Heal	5	50	177.24	6.48	28.86	2.12
n				20		16	
Ø				285.71		24.05	
s				146.19		6.42	
CV %				51.17		26.67	
s_r²				489		0.55	
s_L²				20555		43.27	
s_R²				21045		43.82	
r				61.93		2.08	
R				406.19		18.53	

**Bursting strength
ISO 13938-2**



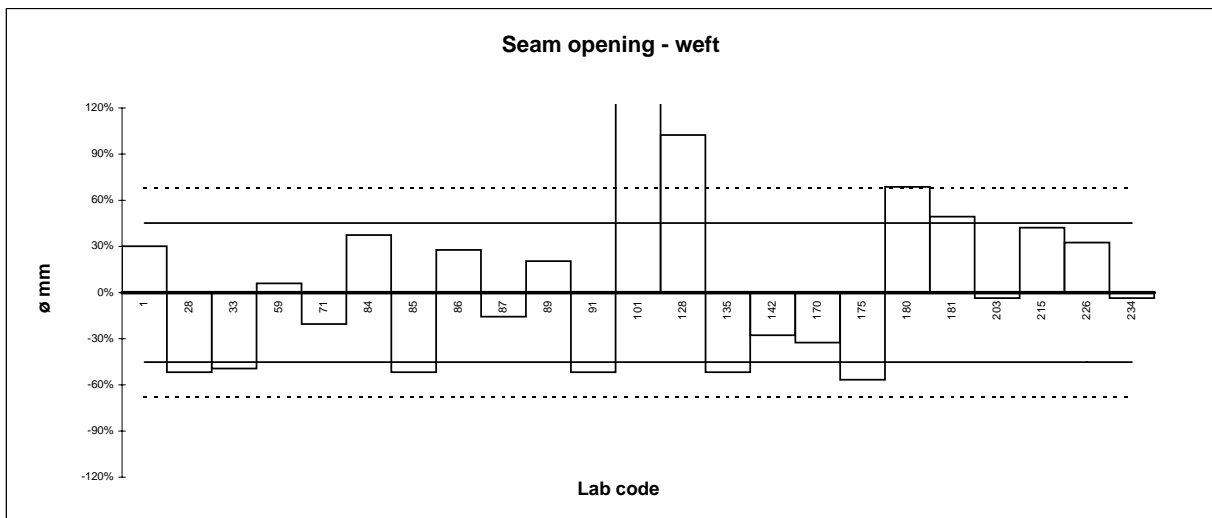
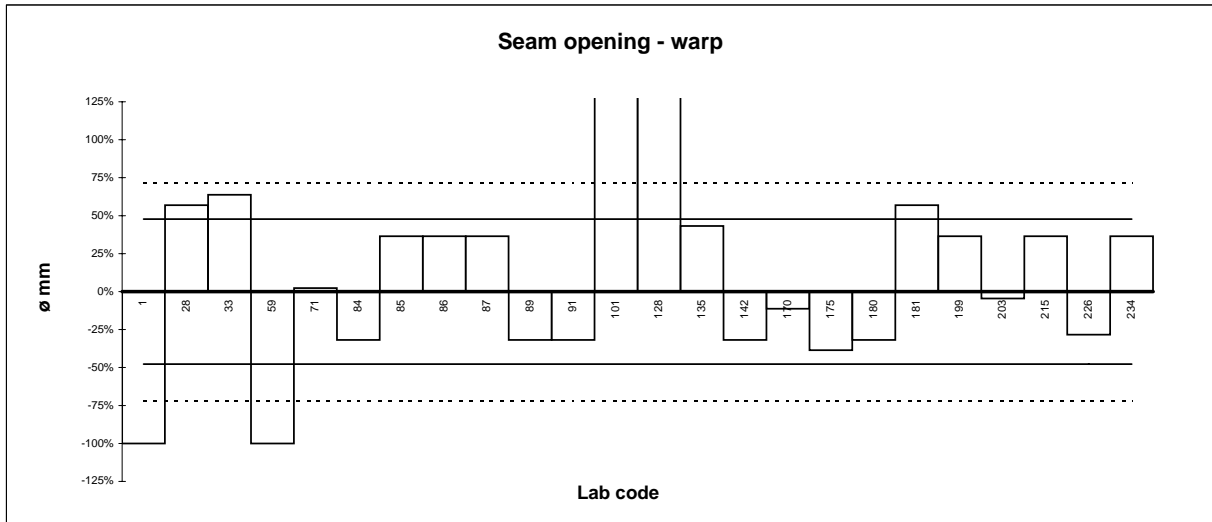
Seam slippage strength ISO 13936-1													
Lab Code	Testing equipment	No. of tests	Pre-tension [N]	Testing length [mm]	Testing speed [mm/min]	Force at seam opening 2 mm				Force at seam opening 4 mm			
						warp ø N	CV%	weft ø N	CV%	warp ø N	CV%	weft ø N	CV%
1	Zwick Z010	5		100	50	84.50	10.79						
27	Zwick UPM 1455	5	0	100	50	76.90	2.03	37.70	11.20	x	>200	61.90	10.90
28	Zwick 1445	5	5	100	50	78.78	17.94						
44	Hounsfield	20	0	100	50	80.00	14.00	35.00	21.00	x	>200	84.00	33.60
59	Autograph	5		100	50	90.20		45.60		x	>200	92.80	
71	Zwick Z010	5	5	100	50	63.60	4.72						
86	Hounsfield	5		100	50	84.00	16.30	34.20	15.40		303.00	8.90	58.20
89	Zwick 1456	5	5	100	50	94.00		31.50		x	>400	45.20	18.80
90	Titan	5	0	100	50						19.55	7.41	103.66
101	Titan JH	5		100	50	49.00	4.10	x 252.00	2.70	83.00	3.80	x 317.00	5.93
107	Instron		2	100	50	35.80		19.70		115.20		28.50	
116	ZT-400	5		100	50	52.00	5.50	o 113.00	13.20	100.00	4.10	x >200	
117	Instron 4465	4		100	50	32.00	9.40	o 112.00	24.00	56.00	23.50	x >200	
128	Tinius Olsen	5	5	100	50	62.00	20.70	33.80	6.30	280.00	10.00	49.80	3.60
135	Instron	5	5	100	50					171.50	23.30	x 356.60	8.16
142	SDL UTT	5		100	50					188.00	2.60	111.80	5.20
151	Mesdan	5	2	100	50	45.20	14.10	32.40	14.00	335.02	9.60	33.10	10.10
166	Statigraph	5	2	75	50	o 24.00	12.00	19.00	24.40	46.00	9.10	120.00	16.90
170	Instron 4301	5		100	50	72.00	1.80	39.00	12.70			75.00	28.20
180	Zwick	5	1	100	50	29.00	8.20	40.00	0.00			x >200	
181	Zwick Z005	5	5	100	50	o 105.00	14.30	35.30	21.80	310.00	17.50	40.50	15.50
189	Hounsfield	1	0	100	50	34.30	23.00	82.00	7.00				
192	Zwick BZ 2.5	5	5	100	50	70.16	16.23	46.35	13.77	119.94	7.93	89.77	12.91
198	Zwick 1445	5	3	100	100	91.00	7.79	56.00	5.40	o 397.00	6.38	77.00	8.38
199	Hounsfield	5	0	100	50	86.00	7.20	28.00	9.40	x >200		25.00	3.60
203	Zwick 1455	5	2	100	50	31.11	16.20	39.75	12.10	40.50	16.20	o 182.76	1.90
215	Instron 4465	5		100	50	86.40	17.80	41.80	11.50	200.10	1.87	94.70	12.50
226	Titan	4		100	50	x 130.87		33.70		x >200		37.50	
234	Hounsfield H10KS	5	5	100	50	43.88	1.21	o 89.00	12.33	44.33	3.26		
n						25		22		17		19	
Ø						64.03		47.49		165.24		74.27	
s						24.40		26.79		120.04		39.30	
CV %						38.10		56.40		72.64		52.91	
s_r²						85.20		69.29					
s_L²						499.41		641.54					
s_R²						584.61		710.83					
r						25.85		23.31					
R						67.70		74.65					

Seam slippage strength
ISO 13936-1



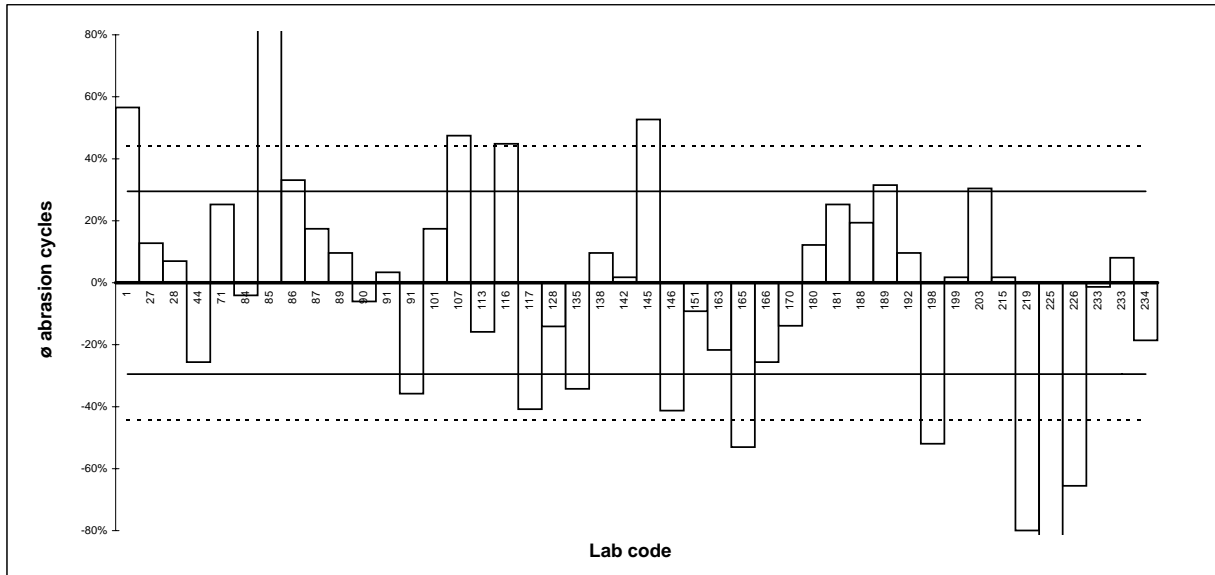
Seam slippage strength ISO 13936-2										
Lab Code	Testing equipment	No. of tests	Pre-tension [N]	Testing length [mm]	Testing speed [mm/min]	Testing force [N]	∅ seam opening warp [mm]	∅ seam opening weft [mm]		
1	Zwick Z010	5	1	100	50	60	o	0.0	5.4	
28	Zwick 1445	5	0.1	75	50	60		2.3	2.0	
33	Dynamometre	3	0	100	50	60		2.4	2.1	
59	Autograph	5		100	50	60	o	0.0	4.4	
71	Zwick Z010	5	5	100	50	60		1.5	3.3	
84	Instron 4301	5		100	50	60		1.0	5.7	
85	Instron CRE	5		10	50	60		2.0	2.0	
86	Hounsfield	5		10	50	60		2.0	5.3	
87	Zwick Z020	5		100	50	60		2.0	3.5	
89	Zwick 1456	5		100	50	60		1.0	5.0	
91	Instron	5		100	50	60		1.0	2.0	
101	Titan JH	5		100	50	60	x	4.0	x	9.6
128	Tinius Olsen	5	2	100	50	60	x	3.6	o	8.4
135	?	5		100	50	60		2.1		2.0
142	SDL UTT	5		100	50	60		1.0		3.0
170	Instron 4301	5		100	50	60		1.3		2.8
175	Testometric	5	0.5	100	50	60		0.9		1.8
180	Zwick	5	1	100	50	60		1.0	o	7.0
181	Zwick Z005	5	5	100	50	60		2.3		6.2
199	Hounsfield	5	0	100	50	60		2.0		
203	Zwick 1455	5	0	100	50	60		1.4		4.0
215	Instron 4465	5	5	100	50	60		2.0		5.9
226	Titan	5		100	50	60		1.1		5.5
234	Hounsfield H10KS	5		100	50	60		2.0		4.0
n								22		22
∅								1.47		4.15
s								0.70		1.88
CV %								47.74		45.20

Seam slippage strength
ISO 13936-2



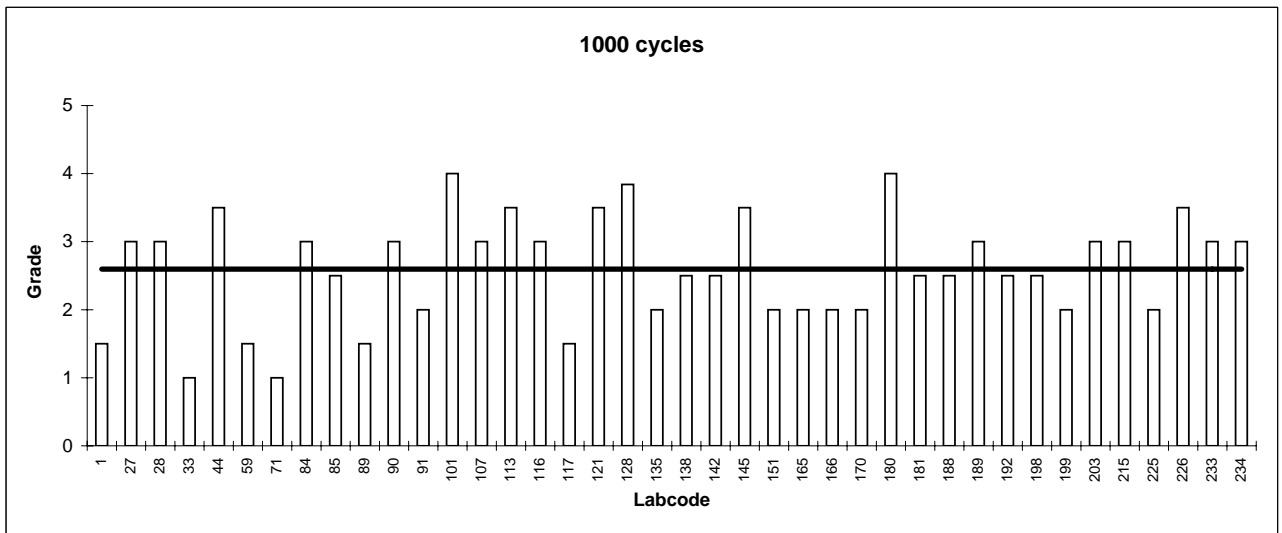
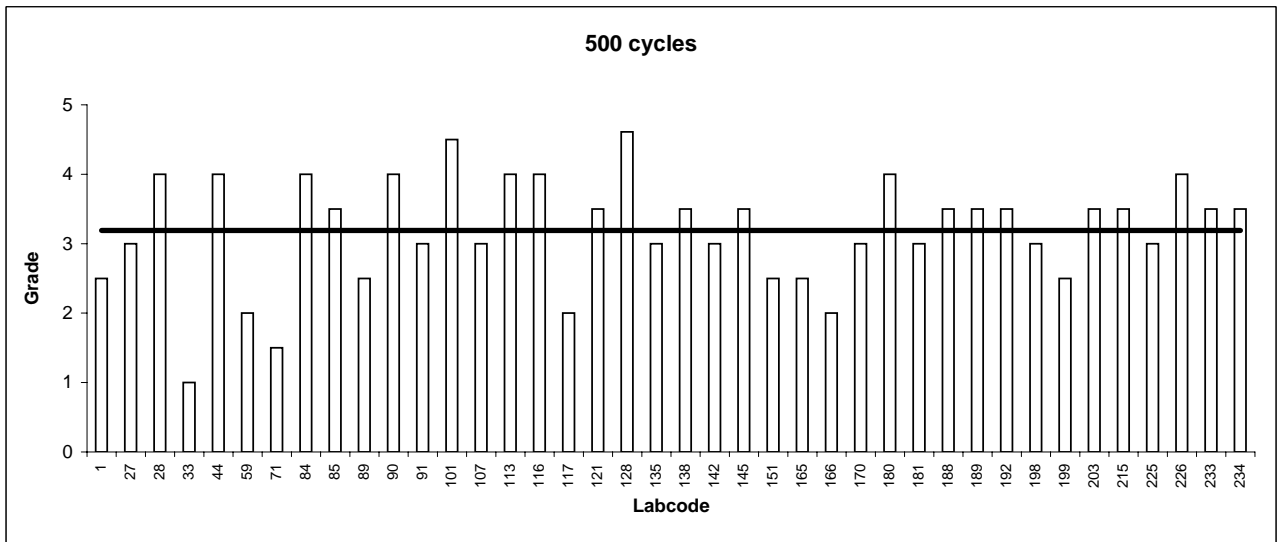
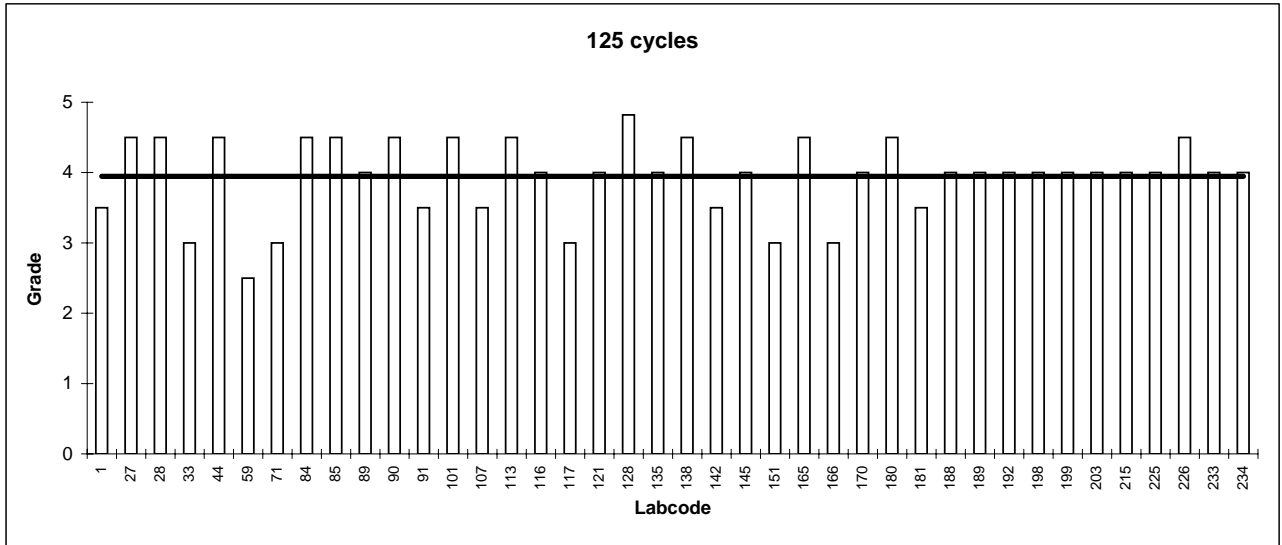
Abrasion resistance Martindale ISO 12947-2					
Lab Code	Testing equipment	No. of tests	Load [kPa]	Pre-abrasion	ø abrasion cycles
1	Martindale SDL M235	4	9	no	o 10000
27	Martindale	3	9	no	72000
28	Martindale	3	9	no	68333
44	Nu-Martindale	4	9	no	47500
71	Nu-Martindale	3	9	no	80000
84	James Heal 403	4	9	no	61250
85	Martindale	3	9	no	x 125000
86	Martindale	4	9	no	85000
87	Martindale	4	9	no	75000
89	Martindale 504	6	9	no	70000
90	Martindale	4	9	no	60000
91	James Heal	4	9	no	66000
91	James Heal	4	9	no	41000
101	James Heal Martindale	4	9	no	75000
107	James Heal	6	9	no	o 94167
113	Nu-Martindale 404	4	9	no	53750
116	Nu-Martindale 406	3	9	no	o 92500
117	Martindale	4	9	no	37800
128	Nu-Martindale 404	5	9	no	54878
135	Nu-Martindale	4	9	no	42000
138	Nu-Martindale Mode 814	3	9	--	70000
142	SDL Abrasion Tester	4	9	no	65000
145	Martindale	4	9	no	o 97500
146	Martindale SDL	4	9	no	37500
151	Martindale	4	9	no	58000
163	Martindale SDL	4	9	no	50000
165	Nu-Martindale, J.Heal 403	6	9	no	o 30000
166	Martindale 403	3	9	no	47500
170	James Heal 403	4	9	no	55000
180	Martindale	3	9	no	71667
181	Martindale	3	9	no	80000
188	SDL M235	4	9	no	76250
189	James Heal	1	9	no	84000
192	Martindale 406	4	9	no	70000
198	Nu-Martindale	4	9	--	o 30700
199	Nu-Martindale J .Heal	4	9	no	65000
203	James Heal	3	9	no	83300
215	Nu-Martindale 406	3	9	no	65000
219	Henry Baer	4	9	no	x 12800
225	Martindale	3	9	no	x 4000
226	Martindale	4	9	no	o 22000
233	Martindale	5	9	no	63000
233	Nu-Martindale	5	9	no	69000
234	Nu-Martindale, J.Heal	3	9	no	52000
n					41
Ø					63868
s					18831
CV %					29.48

Abrasion resistance Martindale
ISO 12947-2

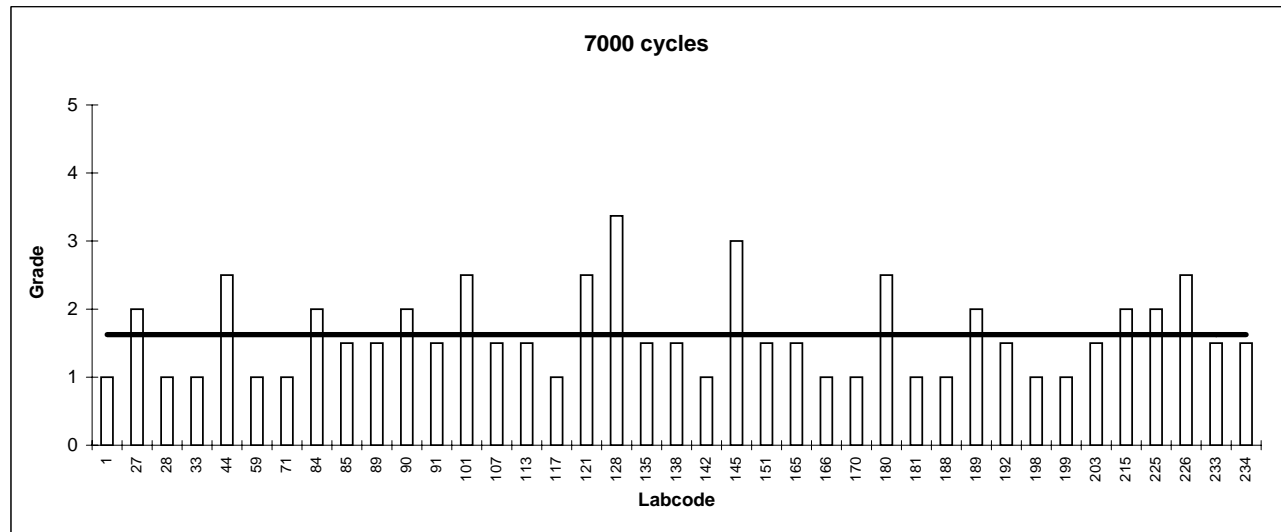
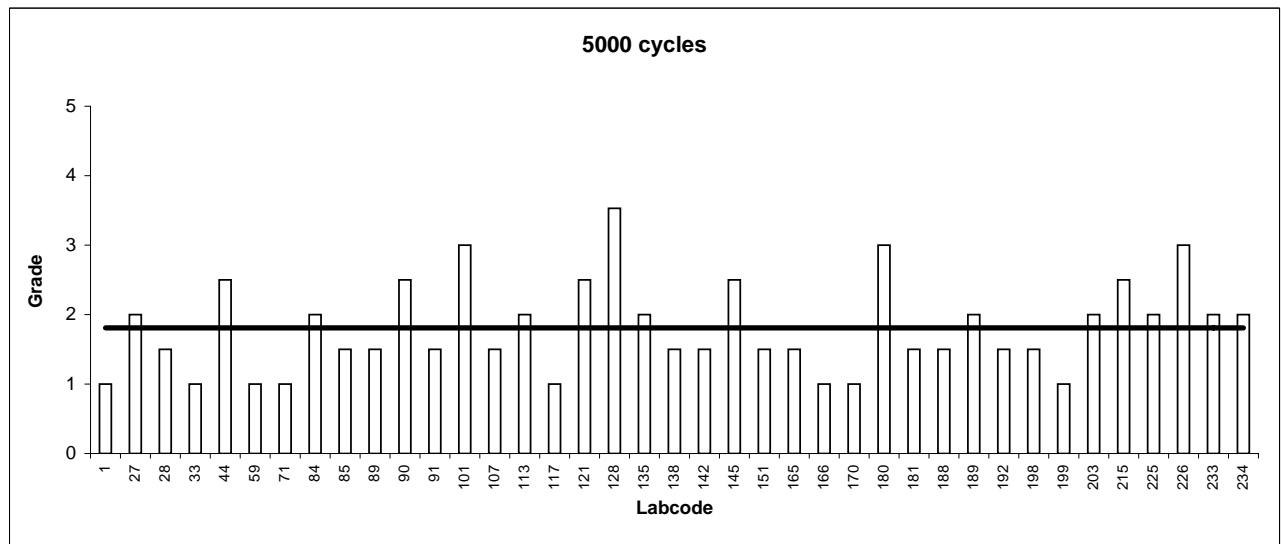
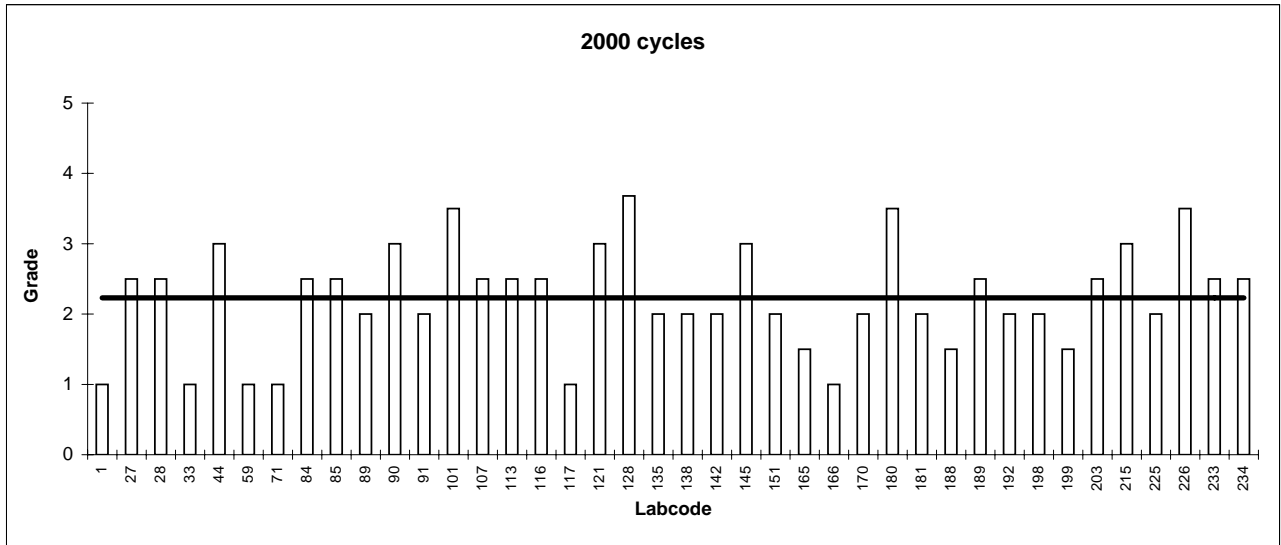


Pilling propensity - Martindale ISO 12945-2											
Lab Code	Testing equipment	No. of tests	No. of observers	Load [g]	Pre-abrasion	ø pilling after cycles.....					
						125 [grade]	500 [grade]	1000 [grade]	2000 [grade]	5000 [grade]	7000 [grade]
1	James Heal	3	5		no	3-4	2-3	1-2	x 1	1	1
27	Martindale	3	3	155	no	4-5	3	3	2-3	2	2
28	Martindale	4	2	155	no	4-5	4	3	2-3	1-2	1
33	Martindale	3	3	155	no	3	x 1	x 3	x 1	1	1
44	Nu-Martindale	3	2	155	no	4-5	4	3-4	3	2-3	2-3
59	Martindale	4	4	155	no	x 2-3	x 2	1-2	x 1	1	1
71	Nu-Martindale	3	2	155	no	3	x 1-2	x 1	x 1	1	1
84	James Heal 403	6	3	155	no	4-5	4	3	2-3	2	2
85	Martindale	2	2	155	no	4-5	3-4	2-3	2-3	1-2	1-2
89	Martindale	3	2		no	4	2-3	1-2	2	1-2	1-2
90	Martindale	4	2	155	no	4-5	4	3	3	2-3	2
91	James Heal	3	3	155	no	3-4	3	2	2	1-2	1-2
101	James Heal	4	2	155	no	4-5	4-5	x 4	x 3-4	x 3	2-3
107	James Heal	6	3	155	no	3-4	3	3	2-3	1-2	1-2
113	Nu-Martindale 404	2	6	155	no	4-5	4	3-4	2-3	2	1-2
116	Nu-Martindale 406	3	2	155	no	4	4	3	2-3		
117	Martindale	6	2	155	no	3	x 2	1-2	x 1	1	1
121	Martindale	4	3	155	no	4	3-4	3-4	3	2-3	2-3
128	Nu-Martindale 404	4	3	415	no	4-5	x 4-5	x 3-4	x 3-4	x 3-4	x 3
135	Martindale	6	2	155	no	4	3	2	2	2	1-2
138	Nu-Martindale Mode 814	4	5	155	-	4-5	3-4	2-3	2	1-2	1-2
142	Martindale	4	2	155	no	3-4	3	2-3	2	1-2	1
145	Martindale	2	1	415	no	4	3-4	3-4	3	2-3	x 3
151	Martindale	3	3	155	no	3	2-3	2	2	1-2	1-2
165	Nu-Martindale, J.Heal 403	6	2	155	no	4-5	2-3	2	1-2	1-2	1-2
166	Martindale 403	3	7	155	no	3	x 2	2	x 1	1	1
170	James Heal 403	3	2	155		4	3	2	2	1	1
180	Martindale	3	2	155		4-5	4	x 4	x 3-4	x 3	2-3
181	Martindale	3	2	155	no	3-4	3	2-3	2	1-2	1
188	SDL M235	3	1	155	no	4	3-4	2-3	1-2	1-2	1
189	James Heal	1	3	155	no	4	3-4	3	2-3	2	2
192	Martindale 406	3	3	155	no	4	3-4	2-3	2	1-2	1-2
198	Nu-Martindale	1	4	155		4	3	2-3	2	1-2	1
199	Nu-Martindale J .Heal	3	2	155	no	4	2-3	2	1-2	1	1
203	James Heal	1	3	155	no	4	3-4	3	2-3	2	1-2
215	Nu-Martindale 406	2	3	155	no	4	3-4	3	3	2-3	2
225	Martindale	4	2	206	no	4	3	2	2	2	2
226	Martindale	3	2	155	no	4-5	4	3-4	x 3-4	x 3	2-3
233	Nu-Martindale 406	4	2	155	no	4	3-4	3	2-3	2	1-2
234	Nu-Martindales, J.Heal	1	3	155	no	4	3-4	3	2-3	2	1-2
n						40	40	40	40	39	39
Ø						3.95	3.19	2.60	2.23	1.81	1.62
s						0.56	0.79	0.79	0.75	0.66	0.63
Median						4	3-4	2-3	2	1-2	1-2

Pilling propensity - Martindale
ISO 12945-2



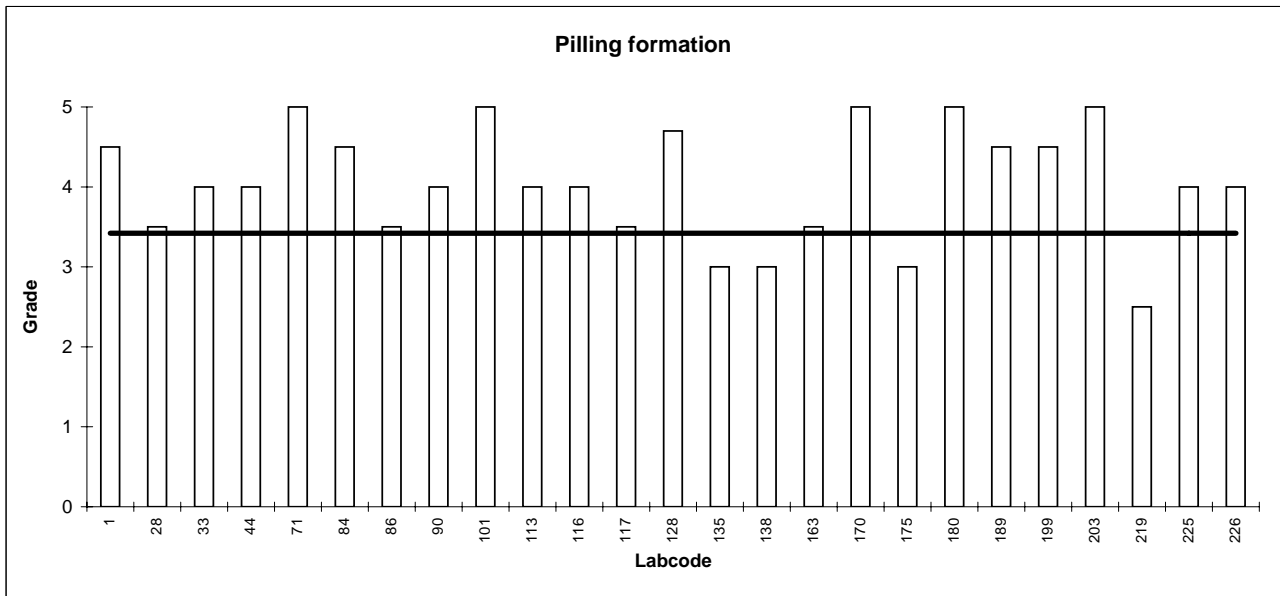
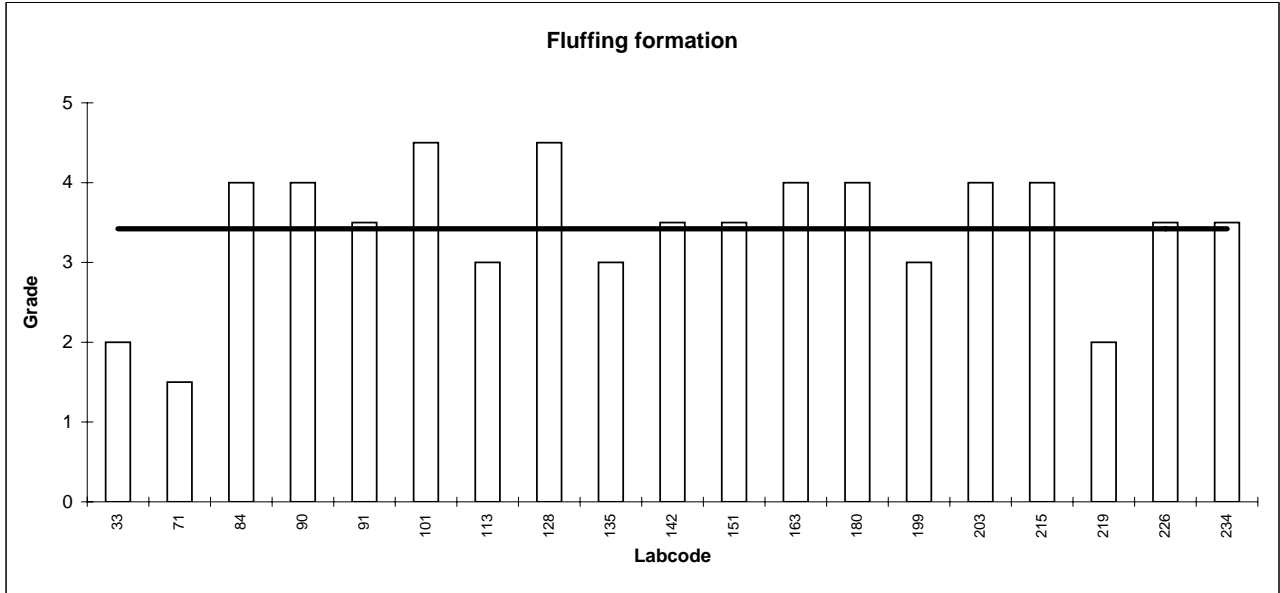
Pilling propensity - Martindale
ISO 12945-2



**Pilling propensity - Pilling box
ISO 12945-1**

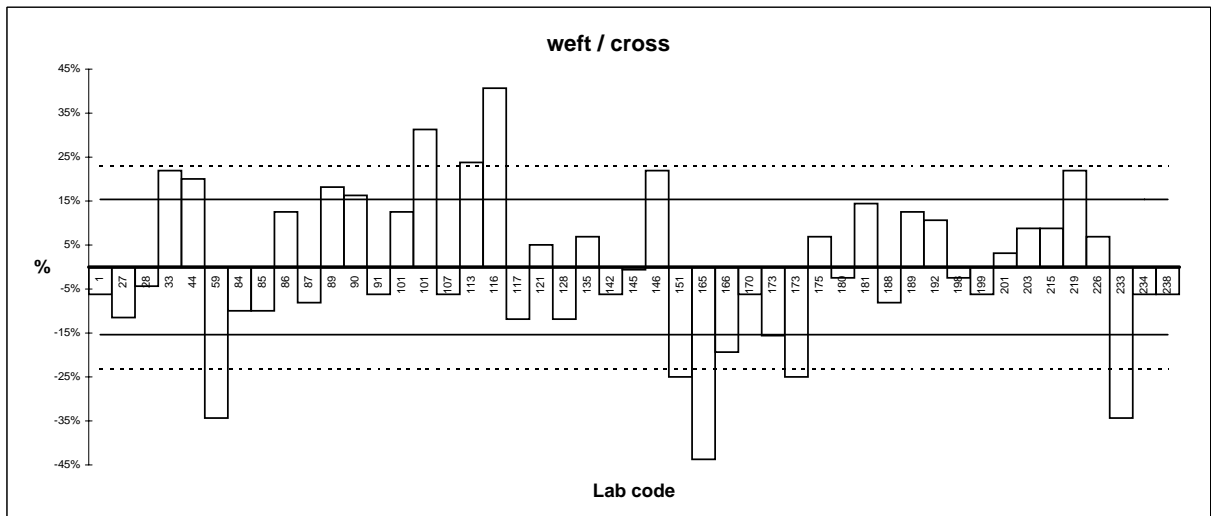
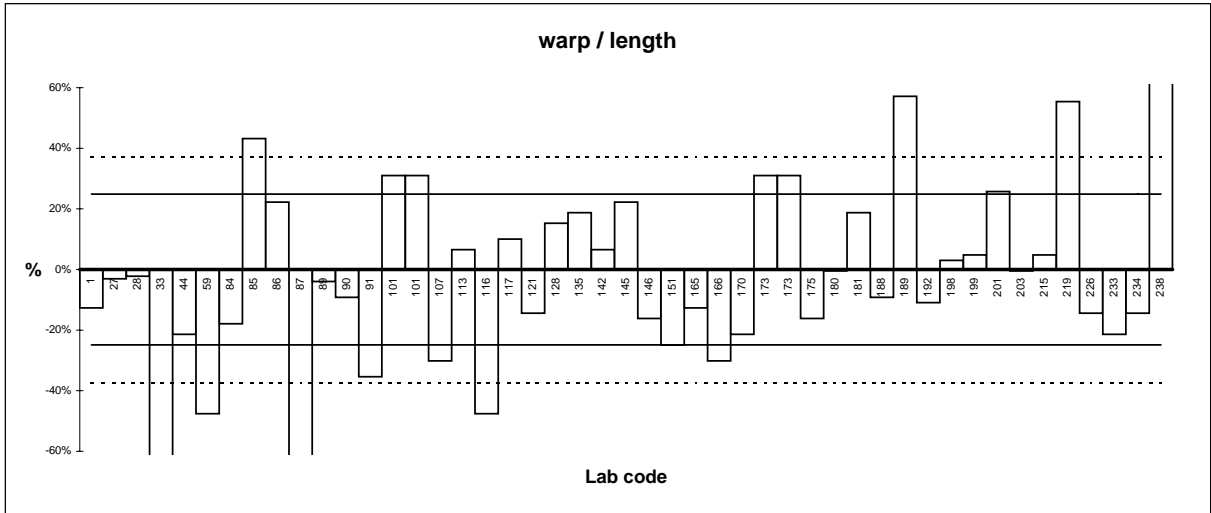
Lab Code	Testing equipment	No. of tests	No. of observers	no. of revolutions	ø fluff generation [grade]	ø pilling [grade]
1	James Heal	4	5	18000		4-5
28	James Heal	4	2	18000		3-4
33	ICI Pill box	4	2	18000	x 2	4
44	Pilling tester	4	2	18000		4
71	Pillingprüfkasten	4	3	18000	x 1-2	5
84	James Heal 116	4	3	18000	4	4-5
86	ICI Pill box - warp	2	3	18000		3-4
90	Pilling box	4	2	18000	4	4
91	James Heal	4	4	18000	3-4	
101	James Heal	4	2	18000	4-5	5
113	ICI 116/4	4	6	18000	3	4
116	Orbitor 516	4	2	18000		4
117	Pilling box	4	2	18000		3-4
128	Orbitor	4	3	10800	4-5	4-5
135	Orbitor Pilling	4	2	18000	3	3
138	ICI - Pilling tester	4	5	18000		3
142	SDL Pilling box	4	2	18000	3-4	
151	ICI Pill box	4	2	18000	3-4	
163	SDL Pilling tester	4	2	18000	4	3-4
170	James Heal	4	2	18000		5
175	ICI Pill box - SDL	4	3	18000		3
180	ICI Pill box	4	2	18000	4	5
189	James Heal	1	3	18000		4-5
199	James Heal	4	2	18000	3	4-5
203	James Heal	4	2	18000	4	5
215	ICI Pill box James Heal	2	3	18000	4	
219	Linitest	10	2	18000	x 2	x 2-3
225	ICI Pilling	4	2	18000		4
226	ICI Pilling	4	2	18000	3-4	4
234	ICI Pilling box SDL	4	2	18000	3-4	
n					19	25
Ø					3.42	4.048
s					0.84	0.73
Median					3-4	4

Pilling propensity - Pilling box
ISO 12945-1



Dimensional change at washing ISO 5077/6330								
Lab Code	Testing equipment	No. of washings	Washing temperature [°C]	Washing powder	Type of drying	no. of measurements	∅ dimensional change warp/length [%]	∅ dimensional change weft/cross [%]
1	Wascator FOM 71	5	60	IEC	flat	3	-5.0	-5.0
27	Wascator FOM 71	5	60	IEC	flat	3	-5.6	-4.7
28	Miele W934	5	60	mild det.	line	3	-5.6	-5.1
33	Wascator FOM 71	5	60	ECE	flat	1	x -2.0	-6.5
44	Wascator	5	60	IEC+SP+TAED	flat	12	-4.5	-6.4
59	Wascator	5	60	ECE 2	flat	3	o -3.0	o -3.5
84	Wascator	5	60	ECE	flat	2	-4.7	-4.8
85	Wascator, Type A	5	60	IEC	flat	6	o -8.2	-4.8
86	Wascator	5	60	ECE	flat	6	-7.0	-6.0
87	Wascator FOM 71	5	60	IEC	flat	3	x -2.1	-4.9
89	Wascator	5	60	IEC+Perborate	flat	3	-5.5	-6.3
90	Wascator	3	60	ECE	flat	3	-5.2	-6.2
91	Wascator	5	60	ECE	flat	6	-3.7	-5.0
101	Wascator FOM 71	5	60	ECE	flat	1	-7.5	-6.0
101	Wascator FOM 71	5	60	ECE	flat	1	-7.5	o -7.0
107	Wascator FOM 71	1	60	ECE	flat	3	-4.0	-5.0
113	Electrolux Wascator	5	60	Fewa Colour Gel	flat	1	-6.1	o -6.6
116	Wascator FOM 71	5	60	ECE	line	3	o -3.0	x -7.5
117	Wascator FOM 71	5	60	ECE	flat	3	-6.3	-4.7
121	Commercial w.m.	5	60	ECE	flat	3	-4.9	-5.6
128	Wascator FOM 71	5	60	ECE	flat	5	-6.6	-4.7
135	Wascator	5	60	ECE-A	flat	3	-6.8	-5.7
142	Wascator SDL	5	60	ECE	flat	3	-6.1	-5.0
145	Wascator	5	60	IEC	air	3	-7.0	-5.3
146	Wascator	5	60	ECE	line	5	-4.8	-6.5
151	Wascator FOM 71	5	60	ECE	flat	3	-4.3	o -4.0
165	Wascator FOM 71	5	60	ECE	flat	3	-5.0	x -3.0
166	Wascator FOM 71	5	60	ECE	flat	2	-4.0	-4.3
170	Wascator FOM 71	5	60	ECE	line	3	-4.5	-5.0
173	Commercial w.m.	5	60	Persil	flat	3	-7.5	-4.5
173	Commercial w.m.	5	60	Persil	flat	3	-7.5	o -4.0
175	Wascator-2A	5	60	ECE	flat	3	-4.8	-5.7
180	Miele	5	60	Commercial	flat	3	-5.7	-5.2
181	Wascator	5	60	IEC	flat	3	-6.8	-6.1
188	Wascator FOM 71	5	60	ECE	flat	3	-5.2	-4.9
189	Wascator FOM 71	5	60	?	flat	3	o -9.0	-6.0
192	Wascator Miele	5	60	no	flat	3	-5.1	-5.9
198	Schulthess	5	60	?	flat	3	-5.9	-5.2
199	Wascator FOM 71	5	60	ECE	flat	3	-6.0	-5.0
201	Miele	5	60	Surf	flat	3	-7.2	-5.5
203	Wascator	5	60	IEC	flat	3	-5.7	-5.8
215	Wascator	5	60	ECE	flat	3	-6.0	-5.8
219	Miele	5	60	mild det.	flat	4	o -8.9	-6.5
226	Wascator	5	60	ECE-A	flat	3	-4.9	-5.7
233	Wascator	5	60	ECE	flat	3	-4.5	o -3.5
234	Wascator	5	60	ECE-A	flat	3	-4.9	-5.0
238	Wascator FOM 71	5	60	ECE-A	flat	3	x -10.0	-5.0
n							44	45
∅							-5.73	-5.33
s							1.42	0.82
CV %							-24.86	-15.39

Dimensional change at washing
ISO 5077/6330



Climate conditions		
Lab Code	°C	% Relative humidity
1	21	63
27	21	64
28	22.5	65.1
33	20	65
44	20	65
59	20	65
63	20	65
71	20	65
84	20	65
85	20	65
86	20	65
87	20	63
89	20	65
90	20	65
91	21	65
101	20	65
107	20.1	62.9
113	20	65
116	20	65
117	20	65
121	22	65
128	20	65
133	20	65
135	21	65
138	20	65
142	22	67
145	20	65
146	20	65
151	21	63.5
163	21	67
165	20	65
166	20	65
168	21	65
170	20	65
173	20	65
175	21	65
179	20	65
180	20	64.5
181	20	65
188	20	63
189	20	65
192	20	65
198	21	65
199	20	65
201	23	55
203	21	65
215	20	65
219	22	62
224	21	65
225	23	65
226	20	65
233	21	65
234	20	65
238	19	67

DICTIONARY / LEXIKON

Abbreviation	English	Deutsch
n	Number of values	Anzahl Werte
$\bar{\emptyset}$	Mean value	Mittelwert
s	Standard deviation	Standardabweichung
CV%	Coefficient of variation (%)	Variationskoeffizient (%)
s_r^2	Repetition variance	Wiederholvarianz
s_L^2	Variance between laboratories	Varianz zwischen den Labors
s_R^2	Comparison variance	Vergleichsvarianz
r	Repetition limit	Wiederholgrenze
R	Comparison limit	Vergleichsgrenze
	Abrasion cycles	Scheuertouren
	Bursting height	Bersthöhe
	Bursting strength	Berstdruck
	Climate conditions	Klimabedingungen
	Cross	Quer
	Dimensional change	Massänderung
	Force	Kraft
	Grade	Note
	Humidity	Feuchtigkeit
	Lab code	Laborkennzahl
	Length	Längs
	Load	Belastung
	No. of measurements	Anzahl Messungen
	No. of observers	Anzahl Beobachter
	No. of revolutions	Anzahl Umdrehungen
	No. of tests	Anzahl Tests
	No. of washings	Anzahl Wäschen
	Pendulum weight	Pendelgewicht
	Pilling after cycles	Pilling nach Touren
	Pre-abrasion	Vorscheuern
	Pre-tension	Vorspannung
	Relative humidity	Relative Feuchte
	Seam opening	Nahtöffnung
	Standard applied	Angewendete Norm
	Test size	Prüffläche
	Testing equipment	Prüfgerät
	Testing length	Einspannlänge
	Testing speed	Prüfgeschwindigkeit
	Testing time	Prüfzeit
	Threads/cm	Faden/cm
	Type of drying	Trocknungsart
	Warp	Kette
	Washing powder	Waschpulver
	Washing temperature	Waschtemperatur
	Weft	Schuss