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6.1.1 (, Relaxation Shrinkage)

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(Dry relaxation)

(Wet relaxation)

,가

(Finished relaxation),

(tumble relaxation)

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< 7>

K

		(1)	(2)	(3)	(4)	
	Kc	4.7+0.3	5.2+0.3	5.4+0.2	5.8+0.2	: 19%
	Kw	4.0+0.7	4.0+0.2	4.2+0.1	4.3+0.1	: 7%
	Ks	18.0+1.0	20.6+1.0	22.8+0.9	25.2+0.6	: 28.6%
	Kc/Kw	1.16+0.12	1.29+0.08	1.28+0.04	1.32+0.04	: 12.1%
	Kc	4.9+0.1	5.2+0.1	5.1+0.1	5.2+0.1	: 5.8%
	Kw	3.8+0.1	3.8+0.1	3.9+0.1	4.0+0.1	: 5.0%
	Ks	18.7+0.3	19.6+0.4	19.9+0.3	21.0+0.3	: 11.0%
	Kc/Kw	1.30+0.04	1.36+0.05	1.33+0.05	1.29+0.23	: -0.8%
,	Kc	4.2+0.5	4.7+0.4	5.0+0.4	5.6+0.2	: 25.0%
	Kw	4.6+0.5	4.4+0.4	4.5+0.3	4.3+0.1	: -7.0%
	Ks	19.0+0.8	20.6+1.1	22.1+1.4	24.3+0.7	: 21.8%
	Kc/Kw	0.93+0.22	1.06+0.17	1.11+0.15	1.31+0.07	: 29.0%
	Kc	4.2+0.4	5.3+0.1	4.6+0.4	5.7+0.1	: 26.3%
	Kw	4.6+0.4	4.3+0.1	4.4+0.2	4.2+0.1	: -9.5%
	Ks	19.2+0.9	22.9+0.6	22.2+1.4	23.7+0.7	: 19.0%
	Kc/Kw	0.94+0.16	1.22+0.03	1.06+0.13	1.36+0.06	: 30.9%
2	Kc	5.2+0.2	5.5+0.1	5.6+0.2	5.9+0.1	: 11.+%
	Kw	4.2+0.1	4.2+0.1	4.2+0.1	4.2+0.1	: 0%
	Ks	22.1+0.6	23.4+0.5	23.4+1.0	24.8+0.6	: 10.9%
	Kc/Kw	1.25+0.07	1.31+0.05	1.32+0.07	1.41+0.06	: 11.3%

가 (Conditioning)

(48)

(40 ° C)

. , 가 (Finished relaxation)

Munden, Doyle,

Brown

K

K가

$$W = \frac{K_w}{L}, C = \frac{K_c}{L} \quad W; WPI \text{ (Wales/inch)}, C; CPI \text{ (Course/inch)}$$

$$S = C \times W = \frac{K_w}{L} \times \frac{K_c}{L} = \frac{K_s}{L^2} \quad K_s, K_c, K_w ;$$

L;

CPI WPI

$$\frac{CPI}{WPI} = \frac{K_c}{K_w} = K_r$$

Kc, Kw, Ks Kr

Knit fabric dimension parameter

6.1.2. Swelling shrinkage

가

(cellulose)

, static relaxation treatment

가 가

. swelling shrinkage .

6.1.3 Felting shrinkage

wool . 가

가 scale 가 differential frictional property

felting shrinkage가 . felting

shrinkage

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6.2

6.2.1

가

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A, B

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M, N

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C, O

가

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AHB,

CJK

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D

, AB, BC, CA 4d

가

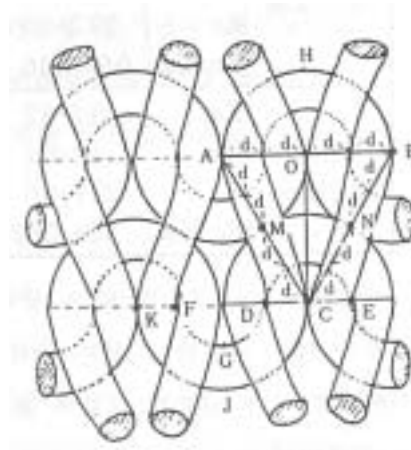
.

1

CO $2\sqrt{3}d$ 가 .

: $= 2\sqrt{3}d:4d = 0.866:1=1:1.155$ 가

, : = 1.155:1 가
 11.5%가 . 가 10
 11.55 .



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< 47> FGDAHBD

16.66d가 L

. 가
 1/8L 가 (lapping) ℓ ,

16.664d---

29.12d----2L-2 ℓ

2x2 62.40d----4L-2 ℓ

33.328d----2L

*d : , ℓ = 1/8L

6.2.2

(1)

가

가

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(CPI). 100

			(CPI)	1 100			
	(in)	(mm)			1x1	2x2	
8	0.0135	0.343	21.3	57.1	99.9	214.0	114.2
10	0.0121	0.307	23.9	51.1	89.4	191.6	102.2
16	0.0096	0.225	32.6	37.4	65.5	140.4	74.9
20	0.0086	0.217	33.8	36.1	63.2	135.4	72.2
26	0.0075	0.190	38.6	31.6	55.3	118.6	63.2
30	0.0069	0.177	41.4	29.5	51.5	110.4	58.9
32	0.0067	0.171	42.9	28.5	49.8	106.7	56.9
36	0.0064	0.163	45.0	27.1	47.5	101.7	54.2
38	0.0062	0.157	46.7	26.1	45.7	98.0	52.5
40	0.0060	0.153	47.9	25.5	44.6	95.5	50.9
42	0.0059	0.150	48.8	25.0	43.7	93.6	49.9
46	0.0056	0.143	51.3	23.8	41.6	89.2	47.6
50	0.0054	0.137	53.5	22.8	39.9	85.5	45.6
60	0.0049	0.125	58.7	20.8	36.4	78.0	41.6
80	0.0043	0.108	67.9	18.0	31.4	67.4	35.9
100	0.0038	0.097	75.6	16.1	28.2	60.5	32.3

$(in)=1/20.6\sqrt{Ne}=0.97/\sqrt{Ne} \text{ (mm)}$

Ne;

$100 \hspace{1.5cm} (mm) \hspace{0.5cm} < \hspace{0.5cm} 8 > \hspace{1.5cm} .$

(2) ,

$< \hspace{0.5cm} 9 > \hspace{1.5cm} ,$

		(mm)	(mm)
5	2/10	0.568	0.595
6	2/12	0.519	0.543
8	2/16	0.449	0.470
10	2/20	0.402	0.421
12	2/24	0.367	0.384
16	2/32	0.318	0.333
18	2/36	0.299	0.313
20	2/40	0.284	0.297
24	2/48	0.259	0.271
27	2/54	0.244	0.256
30	2/60	0.232	0.243
36	2/72	0.212	0.222

$=1/20.0\sqrt{Nm} \text{ (in)} \hspace{1.5cm} 1.27/\sqrt{Nm} \text{ (mm)}$

$$=1/19.1\sqrt{Nm} \text{ (in)} \quad 1.33/\sqrt{Nm} \text{ (mm)}$$

, Nm

< 9>

$$=1/22.64\sqrt{Nm} \text{ (in)} \quad 1.122/\sqrt{Nm} \text{ (mm)}$$

(3) ,

$$=\sqrt{D}/2023 \text{ (in)} \quad 0.0126\sqrt{D}$$

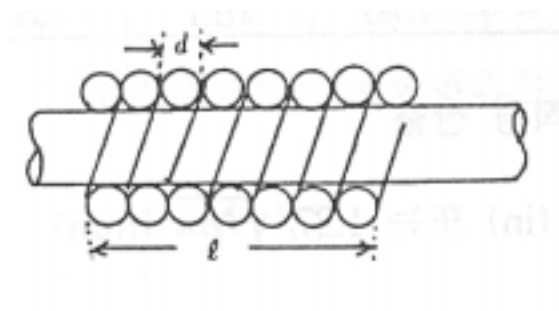
, D denier

(4) ,

$$(\text{cm})=4.44\times\sqrt{\delta/\text{tex}}\times10^{-3}$$

, δ , tex .

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$$d=1/\ell=1/(\sqrt{L}-a)$$

1x1

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	(mm)	WPI	CPI			30in	30in (cm)	(g/m)	(/m)
8	0.343	18.5	21.6	14.4	14	1416	193	499	850
10	0.307	20.7	23.9	16.1	16	1512	187	436	941
16	0.223	28.2	32.6	22.0	20	1884	181	332	1282
20	0.217	29.3	33.8	22.9	23	2172	191	305	1331
26	0.190	33.4	38.6	26.1	26	2448	186	265	1520
30	0.177	35.9*	41.4	28.0	28	2640	185	248	1630
32	0.171	37.1	42.9	28.9	29	2736	186	240	1689
36	0.163	39.0	45.0	30.4	30	2826	184	223	1772
38	0.157	40.4	46.7	31.5	32	3024	190	224	1839
40	0.153	41.5	47.9	32.4	32	3024	184	213	1886
42	0.150	42.3	48.8	33.0	33	3110	187	208	1920
46	0.143	44.4	51.3	34.6	35	3298	187	202	2020
50	0.137	46.4	53.5	36.2	36	3384	185	190	2106
60	0.125	50.8	58.7	39.6	40	3768	187	176	2311
80	0.108	58.8	67.9	45.9	46	4344	189	153	2673
100	0.097	65.5	75.6	51.1	51	4806	186	135	2976

*30'S 28

< 11> 1x1

	(mm)	4d (mm)	4dx1.3276 (mm)	$2\sqrt{3}d$ (mm)	1x1 29.12d (mm)	(g/m)	39cm	17in (/)
8	0.343	1.372	1.821	1.188	9.988	0.0738	428	8.0
10	0.307	1.228	1.063	1.063	8.940	0.0591	478	9.0
16	0.223	0.900	0.779	0.779	6.552	0.0369	652	12.2
20	0.217	0.868	0.752	0.752	6.319	0.0295	678	12.7
26	0.190	0.760	0.658	0.658	5.533	0.0227	772	14.5
30	0.177	0.708	0.613	0.613	5.154	0.0197	830	15.5
32	0.171	0.684	0.592	0.592	4.980	0.0185	860	16.0
36	0.163	0.652	0.565	0.565	4.747	0.0164	900	17.0
38	0.157	0.628	0.544	0.544	4.572	0.0155	936	17.5
40	0.153	0.612	0.530	0.530	4.455	0.0148	960	18.0
42	0.150	0.600	0.520	0.520	4.368	0.0141	978	18.3
46	0.143	0.572	0.495	0.495	4.164	0.0128	1028	19.2
50	0.137	0.548	0.475	0.475	3.989	0.0118	1072	20.0
60	0.125	0.500	0.433	0.433	3.640	0.00984	1174	22.0
80	0.108	0.432	0.374	0.374	3.145	0.00738	1360	25.5
100	0.097	0.388	0.336	0.336	2.825	0.00591	1516	28.4

*U T , 40'S 17in 960 , x2=78cm ,
0.8125mm (0.612mm x 1.3276), 1 =29.12 x d (mm)

1x1

x2

17 18.6 , 996 , 42.5cm, 5.58d, 5.22

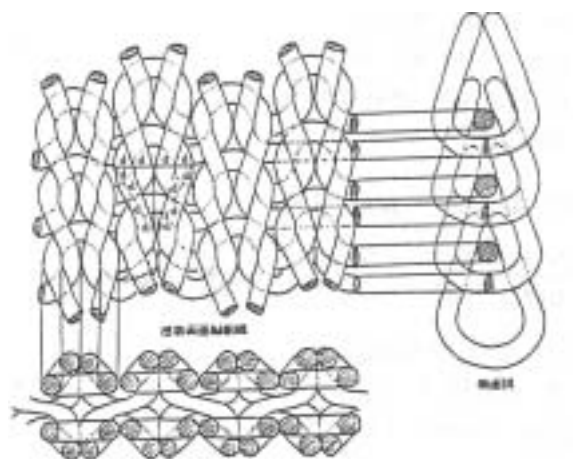
17 18.0 , 990 , 39cm, 5.33d, 5.46

16 18.0 , 900 , 39cm, 5.66d, 5.14

< 12>

	mm	4d;mm	$2\sqrt{3}d$ mm	¹ 3.328d mm	g/m ²	g/m	45cm	20inwlrud (/)
8	0.343	1.372	1.188	11.415	516.8	0.0738	654	10.4
10	0.307	1.228	1.063	10.217	462.6	0.0591	732	11.7
16	0.223	0.900	0.779	7.488	394.1	0.0369	100	15.9
20	0.217	0.868	0.752	7.222	326.4	0.0295	1036	16.5
26	0.190	0.760	0.658	6.323	289.0	0.0227	1184	18.9
30	0.177	0.708	0.613	5.891	267.4	0.0197	1272	20.3
32	0.171	0.684	0.592	5.691	260.0	0.0185	1316	21.0
36	0.163	0.652	0.565	5.425	241.5	0.0164	1380	22.0
38	0.157	0.628	0.544	5.225	237.1	0.0155	1432	22.8
40	0.153	0.612	0.530	5.092	232.3	0.0148	1470	23.4
42	0.150	0.600	0.520	4.992	225.6	0.0141	1500	23.9
46	0.143	0.572	0.495	4.759	215.1	0.0128	1572	25.0
50	0.137	0.548	0.475	4.559	206.7	0.0118	1642	26.1
60	0.125	0.500	0.433	4.160	189.1	0.00984	1800	28.7
80	0.108	0.432	0.374	3.594	164.2	0.00738	2082	33.2
100	0.097	0.388	0.336	3.228	146.3	0.00591	2320	36.9

*U T , 40'S 20in 1470 , x2=90cm ,
 1 =33.328 x d(mm)



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