

가 (1)

- Spandex 가 -

1.

SPANDEX polyurethane

85% polyurethane segment

polyurethane

Maker

segment

segment

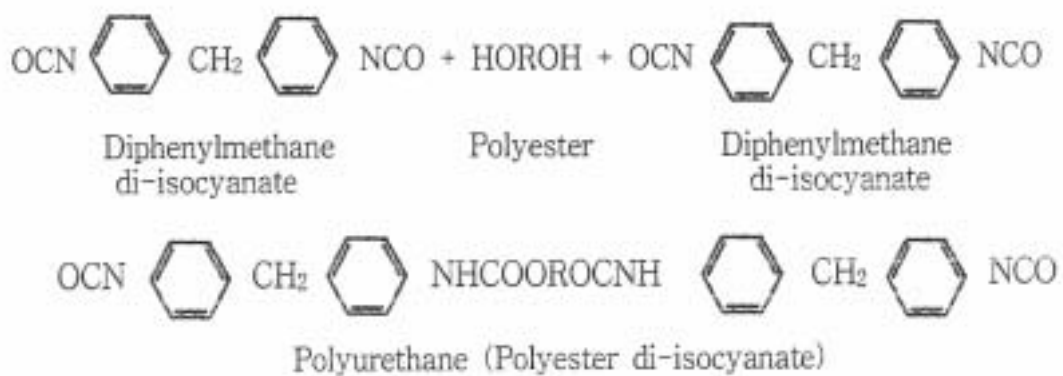
polyester, nylon,

가

DUPONT

“LYCRA”

Spandex



2. SPANDEX

2.1

	0.6 ~ 1.2	
(%)	100	
(%)	450 ~ 800	
	1.2	
(%)	1.0 ~ 1.3	
()	200 ~ 230	
()	,	
(Acid)		
Alkali	alkali mercerizing 가	
	1.8 2	
	,	
	가 .	
	Dry cleaning 가	
,		
	, , (,)	

2.2 Maker

40D Spandex

		TK(1)	TK(2)	DP(S)	DP(B)	DP(N)	TC(B)
1.		20	60	20	9	50	
2. Modulus(g)		10.7		9.5	10.7		5.19
	CV(%)	4.84		2.34	3.5		4.75
3. (%)		5.2	5.9	9.1	13.2	9.6	10.5
	CV(%)	11.9	8.9	6.1	4.9	5.2	3.81
4. DEN		41.7	42	41.3	41.9	40.4	40
	CV(%)	3	2.6	3.3	2.2	1.6	1.35
5. (g)		74.8	73.7	41.8	51.6	67.4	63
	CV(%)	2.6	4.2	11.9	5.8	4	2.57
6. (g/d)		1.8	1.76	1	1.2	1.67	1.65
	CV(%)	11.3	4.2	4.4	7.4	3.6	2.58
7. (%)		525	507	541	580	584	644
	CV(%)	2.7	3.69	5.1	4.5	3.1	2.97
8. (mg)		605	517	320	513	758	531
	CV(%)	11.5	16.3	16.9	28	13.6	7.31
9. 200%M		9.4	12.6	8.7	9.1	9.1	5.59
	CV(%)	4.8	6.5	3.6	2.2	3.5	11.3
10. O.P.U(%)		5.6	5	4.6	3.8	3.6	5.8
	CV(%)	6.3	8.1	6.2	10	9.8	15.5

3. Spandex

1) Bare yarn

Spandex

2) Covered yarn

Spandex Filament S. F coil

3) Core yarn

Draft Spandex core

4) Ply yarn

2~5 Draft Spandex Filament S. F. Doubling

, Twist 가 .

4. Spandex

Spandex , ,

가 .

1) Spandex

300%

300%



: 0.2~0.5%

: 90~97%

2)

3) 10~15 Boiling check .

5. Spandex . 가

5.1

- 1) , , .(pH 4)
- 2) .

5.2 Alkali

- 1) , Alkali 가 .
(Ester pH 9)
- 2) 가 . Mercerizing
(28~30°Be 25)

5.3

- 1) (H_2O_2 ,) (Hydrosulfite 가)
가 ,
- 2) ()

5.4 Carrier

- 1) Polyester 가
- 2) Aromatic Ester .
- 3) carrier

5.5 가

- 1) Amine curring 150
- 2) curring ,

3) curring

5.6 가

- 1) 가 가
- 2) Handle

5.7 Spandex

SPANDEX				
	Build up			
		- o	×	
	o	- o	- o	
1: 2	o	- o	- o	
	o	o	o	
		o	o	Black

5.8 Spandex Heat Setting

- 1) 200 × 150

- 2) : 100
: 150

- 3) Heat set , Draft 가

4) Spandex

Set ()	Set (%)	
38	0	Spandex 100% 1
71	3	
88	12	
102	26	
121	50	

6. Spandex 가

6.1 가

6.1.1

- Relaxing
- Heat Setting
- Scouring(Bleaching, Desizing)
- Dyeing (Printing)
- Finishing

6.1.2 Tricot Non Pile

<Satin >



6.2 Relaxing

6.2.1 Wet Relaxing

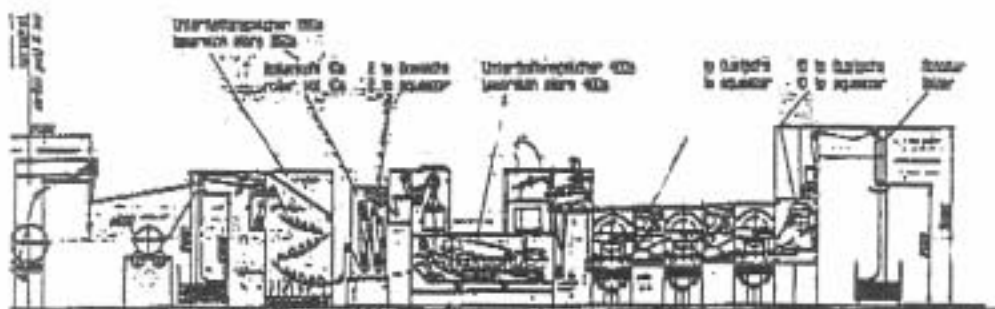
- Steam Relaxing
- Hot Water Relaxing
- Solvent Relaxing

6.2.2 Dry Relaxing

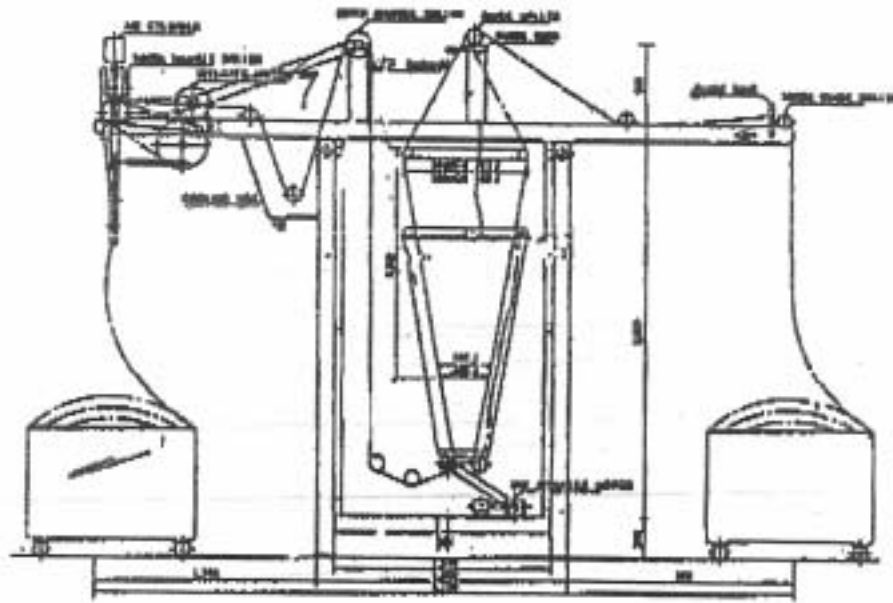
- Heat Setting Relaxing

6.2.3 Relaxer Mechanism

- A) Tricot



B)



6.2.4 Relaxing

1)

2) 가

3) crease

4) Relaxing pre-set

5) Bath

6) over flow

6.3

6.3.1

1) Spandex silicone oil 가

2) Solvet oil

가

가

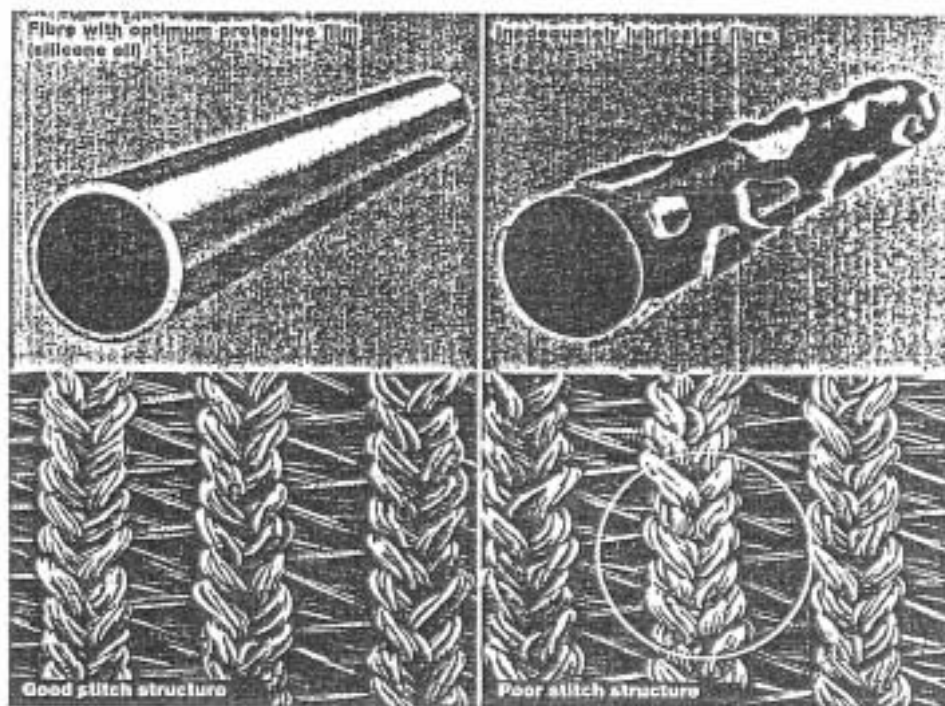
3) ,

4) Batch over flow가

5) oil

[: Silicone 2~5%
: 0.2~0.5%

6) Bayer BASF



<

가

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6.3.2

1) Pad steam

—	H ₂ O ₂ (35%)	10~15cc/l
—	Na ₂ SiO ₃	3~7%
—	Na ₂ CO ₃	1~3%
—	SAA	1~2g/l
—	pH 9.5~10,	80~95 × 40~60

2) Batch 2

3) Nylon

6.3.3 Spandex (Spandex)

	Spandex	A(%)	B(%)	C(%)	
	99 × 16hr	53	91	108	
NaOH 2%	99 × 30	51	20	106	
CH ₃ COOH 1%	99 × 30	88	102	100	

6.4 Heat Setting

Heat setting pre-setting Final setting 가

6.4.1 Heat setting

Wet Set		(Rapid, Winch, Beam)
		Steamer, Steamer
Dry Set		Pin tenter, Dryer, Tube tenter
		Cylinder dryer, Iron

6.4.2 Heat Set

	Hot Water Set	Set	Dry Set
Polyester	120 ~ 130 × 5 ~ 20	120 ~ 130 × 10 ~ 30	190 ~ 210 × 20 ~ 30
Nylon 6	100 ~ 110 × 5 ~ 20	110 ~ 120 × 10 ~ 25	170 ~ 190 × 15 ~ 60
Nylon 66	100 ~ 120 × 5 ~ 20	110 ~ 130 × 10 ~ 30	170 ~ 190 × 15 ~ 60
Acetate	-	-	140 ~ 160 × 180
Acryl	-	80 ~ 100 × 15 ~ 30	90 ~ 110 × 30~40
Spandex	-	-	150 ~ 175 × 90
	-	130 × 15 ~ 30	-

6. 4. 3 Spandex Heat set

1) Spandex

2) 가 . 가 ,

가 .

Relaxing 가 ,

$$S(\%) = \frac{W_l - W_f}{W_f} \times 100$$

Heat set $Eh(\%) = \frac{W_f}{W_t} \times 100$

— W_l : Relaxing
— W_f : 가
— W_t : Heat set Tenter

3) 가

(A) Heat set 가 가

○ .

○

○ , Jammed Fabric(, Foundation)

(B) Relaxing Heat set .

○ Relaxing 가 가

(C) Heat set

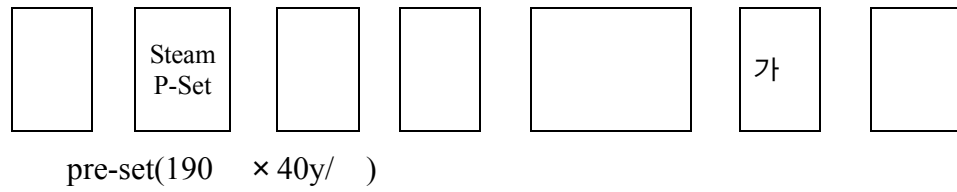
○ Relaxing 가 가

7. Spandex 가

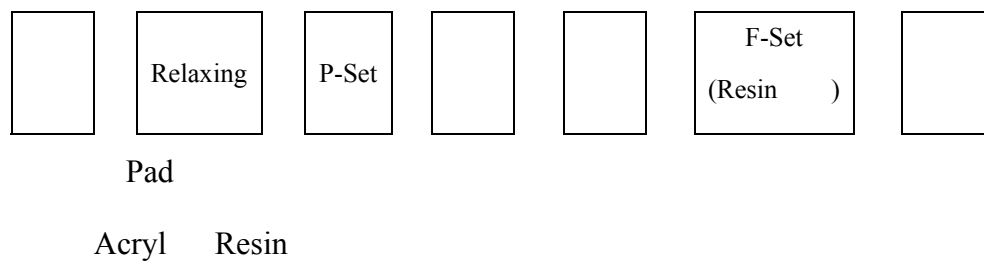
가

7.1 Spandex

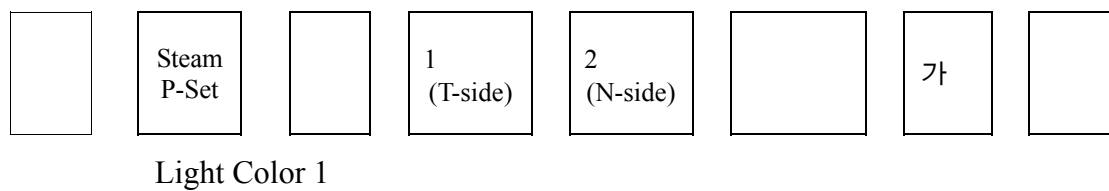
(1) Polyester/Spandex(Velvet)



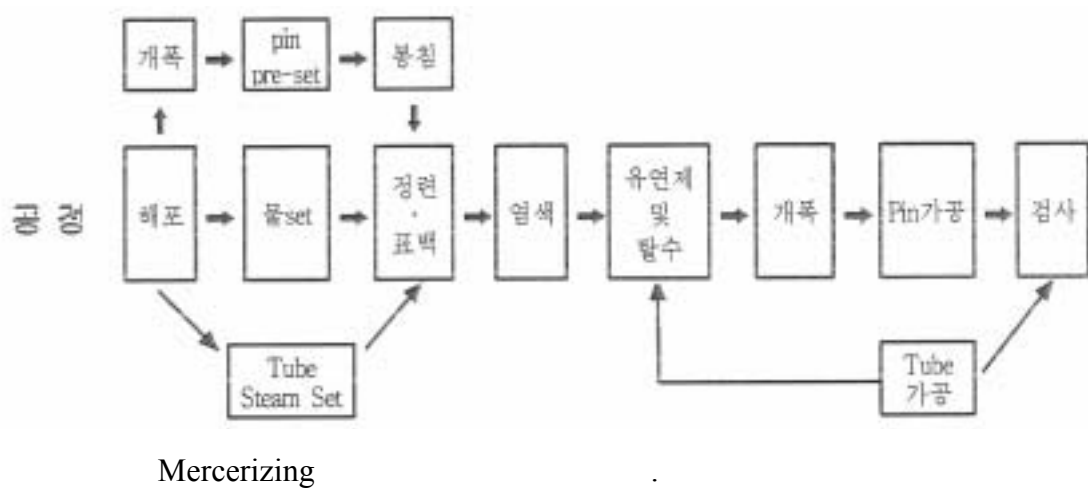
(2) Nylon/Spandex(SATIN)



(3) PET/Nylon/Spandex(Two Tone Velvet)



(4) Cotton/Spandex(SP knit)



7.2 Spandex

1) Spandex

2) (3) - PET/NY/SP

3) Levelling Build up

4) R · C 가 .

5)

6) Spandex

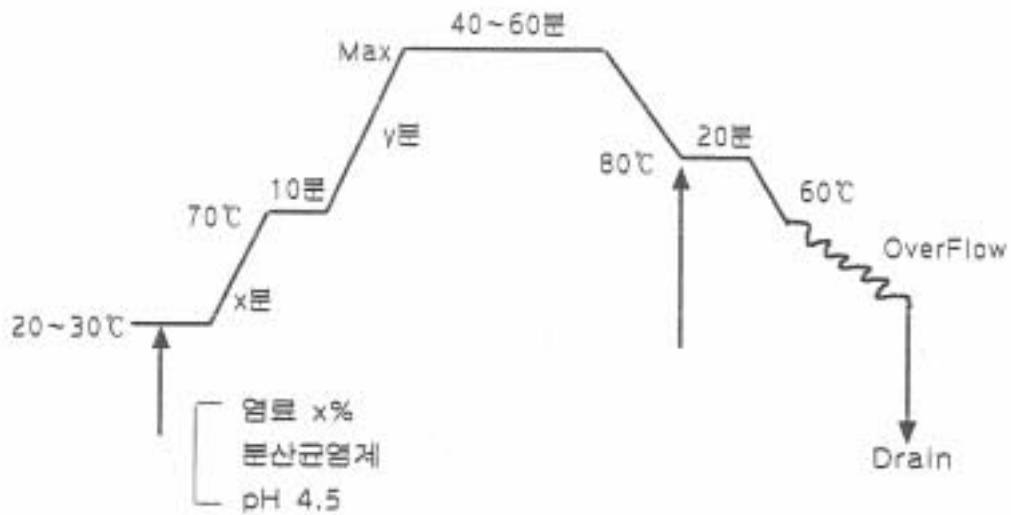
7) 가 Type 가

8) ,

9) check

7.3

7.3.1 Polyester.Spandex(Velvet)



단, Max, Temp : 120~130℃
 승온시간 : PET와 동일

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1) Spandex denier가 130 가

2) 가

3) pile



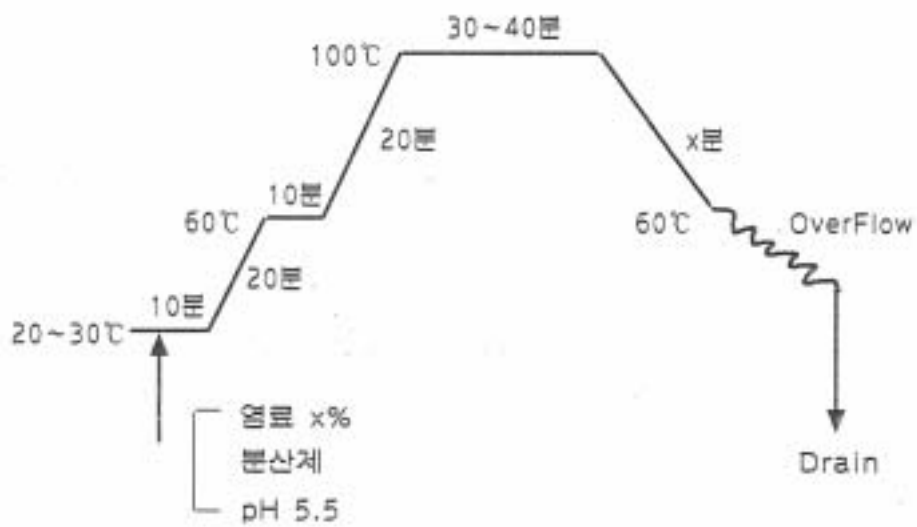
4) cooling crease

5) over flow

6)

7.3.2 Nylon/Spandex(Satin)

(Light color)

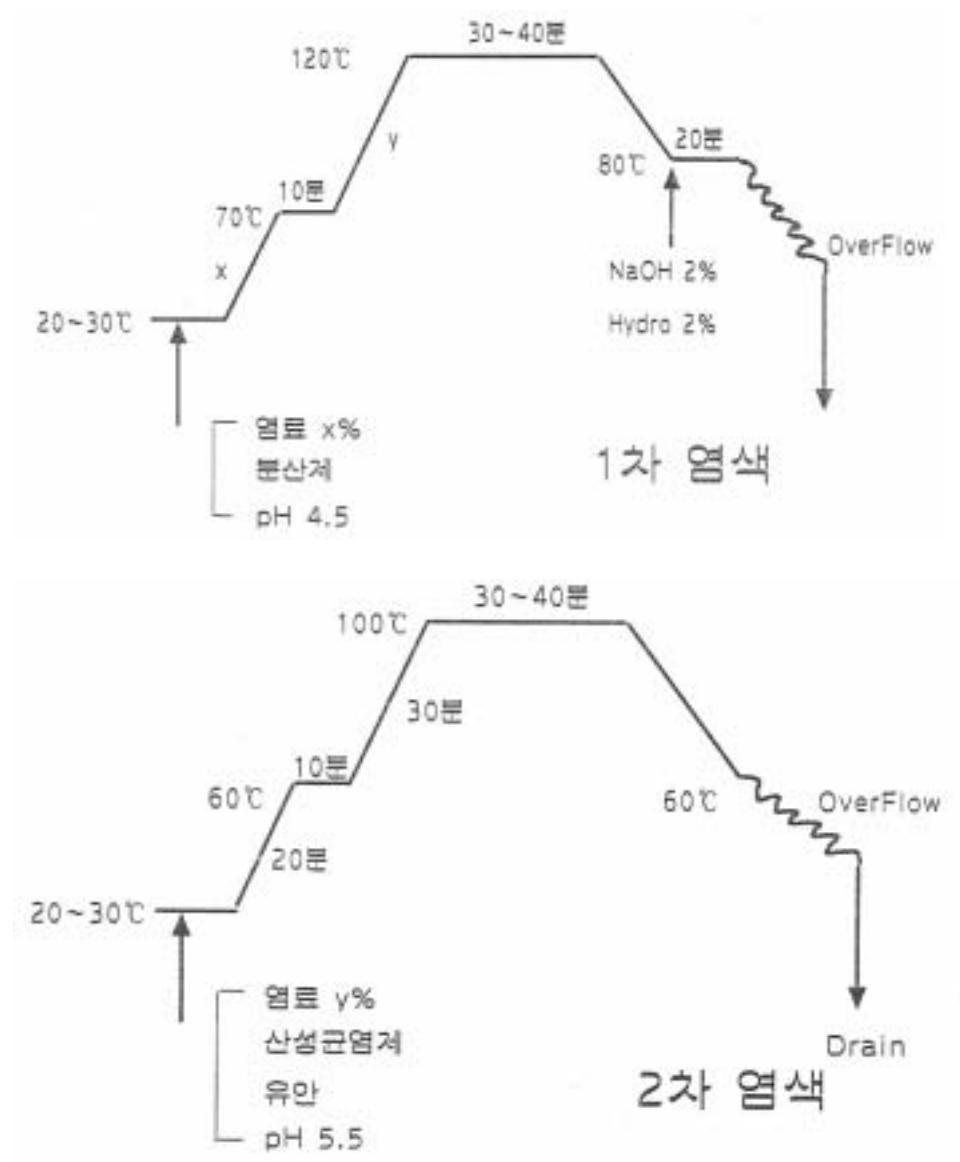


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1) 10

- 2)
 - 3) . (cooling crease)
 - 4)
 - 5) 가
- vinyl

7.3.3 Polyester/Nylon/Spandex(Two Tone Velvet)



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1) 1 Polyester/Spandex .

2) R · C .

“N”side 가 2 LOT

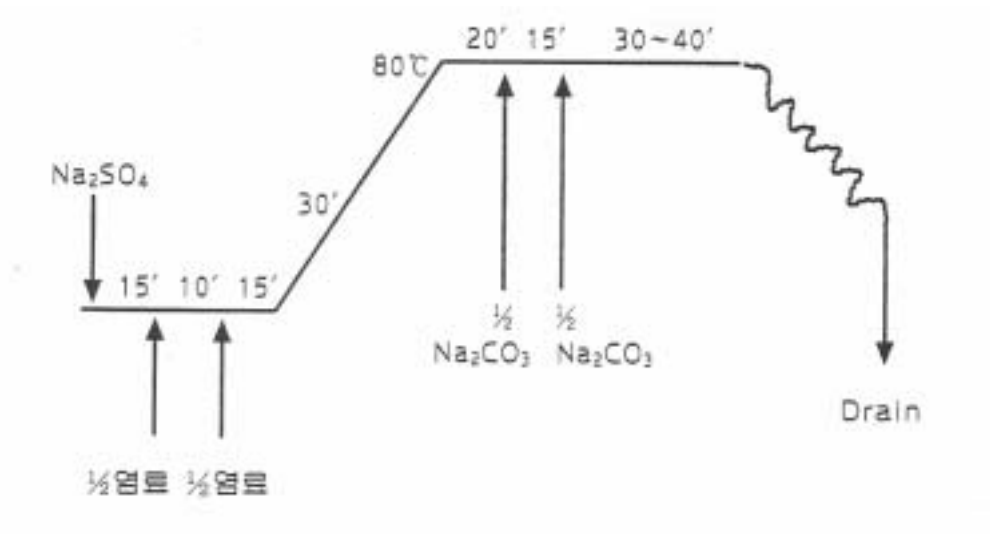
3) Nylon side가 가 B/T .

4) 2 .

5) 2 color가 .

6) 1, 2 cooling crease .

7.3.4 /Spandex



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1) Alkali Na₂CO₃

2) pilling

3) ()

4) 가

5) , .

7.4 Final 가

1. 가	1.1 () 60~62 " (Buyer)	
2. 가	2.1 () 2.2 가 .	
3. Rolling pile	3.1 Rolling 3.2 Roll Box packing	
4.	4.1 Tenter cooling system	
5. ()	5.1 Tension, speed, Gauge check → ()	
6. 가	6.1 Final Tentering Rolling (Tenter Rolling)	
7. Velvet Rolling	7.1 Rolling pile .	
8.	8.1 Pre-setting , cooling	
9. over	9.1 over feed 9.1 Steaming	
10. crease	10.1 Relaxing , 10.2 Pre-setting	
11. Curling	11.1 Pre-setting Pre & post	
	(,), Shearing , stop mark , crease	