



(72)

40359	925
45206	11349
18657	8
45241	20
45066	8575
45213	2797

(74)

:

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(54)

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가  $10^{12}$  가

(hydroxide formation constant)가  $10^{12}$  가

가 , (mucus) .

가 , (countertop), (vanity) ,

가 , ( , , )

가 , 가 , 가 , .가

가 가 가 , 가 , 가 , (redness) 가 가 .

가 가 ; (3) 가 , (1) 가 ; (2)

4,738,847 (Rothe , 1988 4 19 ) , 3 가 /

4,828,912 (Hossain , 1989 5 9 ) , /

2가 가 가 .

5 pH 가 , pH가 가 pH 3 . pH 4



" ( ) " , 2 (gluing) (embossing) 2

" (carrier)" ,

" (through air drying)" " (blow through drying)" ,

" (mechanical dewatering)" , " (conventional wet pressing)" "  
(conventional felt pressing)" ,

" (wire side)" , (wet end)  
( , fourdrinier )

" (fabric side)" , (wet end)

" (polyhydric alcohol)" 가 .

가 , , , , 1

%,

A.

, - , - , 가  
2 , 130g/m<sup>2</sup> , 20g/m<sup>2</sup> 80g/m<sup>2</sup> , 가 (basis weight) 10g/m  
25g/m<sup>2</sup> 60g/m<sup>2</sup> .

( , 2 )

2 가 . 1 , 2

1 , 2

1

(foraminous forming wire, rmaking furnish)

fourdrinier

(pape

(consistency)가 fourdrinier (opening)

(fiber consistency)가 7 25% ( )가

Yankee 가 ( , Yankee ) , Yankee 가

가 " " (compact)

(pattern densified tissue paper) (bulk field) 가 (pillow region) 가 (densified zone) 가

3,301,746 (S anford , 1967 1 31 ), 3,974,025 (Ayers, 1976 8 10 ), 4,191,609 (Trokhan, 1980 3 4 ), 4,637,859 (Trokhan, 1987 1 20 ), 5,364,504 (Smurkoski , 1994 11 15 ), 5,366,785 (Sawdai, 1994 11 22 ), 5,529,664 (Trokhan , 1996 6 25 ), 5,679,222 (Rasch , 1997 10 21 )

( , fourdrinier ) (an array of supports)

(densified zone)

(high bulk field)

가 (dedensify)

가

125% 가 (densified knuckle) 8% 55% ,  
 가 (patterned displacement) (imprinting carrier fabric)

3,301,74  
 6 (Sanford , 1967 1 31 ), 3,473,576 (Amneus, 1969 10 21 ), 3,573,164 (Friedberg , 1971 3 30 ), 3,821,068 (Salvucci , 1974 5 21 ), 3,974,025 (Ayers, 1976 8 10 ), 4,239,065 (Trokhan, 1980 12 16 ), 4,528,239 (Trokhan, 1985 7 9 ), 5,098,522 (Smurkoski, 1992 3 24 ), 5,275,700 (Trokhan, 1994 1 4 ), 5,328,565 (Rasch , 1994 7 12 ), 5,334,289 (Trokhan , 1994 8 2 ), 5,496,624 (Stelljes, Jr. , 1996 3 5 ), 5,500,277 (Trokhan , 1996 3 19 ), 5,628,876 (Ayers , 1997 5 13 ) 5,679,222 (Rasch , 1997 10 21 ).

(furnish) - ( , fourdrinier )  
 (fouaminous supportion carrier) (deposit) 가 40% 80%가  
 (face) (nip roll) { , Yankee )

(densified zone)

(uncompacted, nonpattern - densified)  
 3,812,000 (Salvucci , 1974 5 21 ) 4,208,459 (Becker , 1980 )  
 6 17 ) (uncompacted, nonpattern - densified)  
 ( , fourdrinier ) (papermaking furnish)  
 (draining) 가 80%  
 가 (creping)

(bonding material)

(draining) (fourdrinier) 가 25 50%가 (creping) 가

: 3,994,771 (Morgan, Jr. , 1976 11 30 ), 4,225,382 (Kearney , 1980 9 30 ), 4,300,981 (Carstens , 1981 11 17 ), 5,245,025 (Trokhan , 1993 9 14 ), 5,277,761 (Phan , 1994 1 11 ), 5,443,691 (Phan , 1995 8 22 ), 5,503,715 (Trokhan , 1996 4 2 ), 5,527,428 (Trokhan , 1996 6 18 ), 5,534,326 (Trokhan , 1996 7 9 ), 5,614,061 (Phan , 1997 3 25 ), 5,654,076 (Trokhan , 1997 8 5 ), 5,804,036 (Phan , 1998 9 8 ), 5,804,281 (Phan , 1998 9 8 ), 5,814,188 (Vinson , 1998 9 29 ) 5,820,730 (Phan , 1998 10 13 ).

5,411,636 (Hermans , 1995 5 2 ) EP 677612 (Wendt , 1995 1 0 18 )

(foreshortening) (rigid surface) (Yankee (doctor blade) (creping) ) : 6,048,938 (Neal , 2000 4 11 ), 5,942,085 (Neal , 1999 8 24 ), 5,865,950 (Vinson , 1999 2 2 ), 4,191,756 (Sawdai, 1980 5 4 ), 09/042,936 ( : 1998 3 17 ).

가 (foreshortening) 4,440,597 (Wells , 1984 4 3 )

가 ( )가 { MICROBAN (Microban Products Co., )}가 PULPEX (Hercules, Inc., )

가 (groundwood, )가 (" (softwood)" ) (" (hardwood)" )

가 가 가 , (furnish)  
 가 가 가 ,  
 , " "  
 가  
 가  
 가 : 3,700,623 (Keim, 1972 , 10 24 ) 3,772,076 (Keim, 1973  
 11 13 ).  
 - , KYMENE ( 557H (Hercules Inc.,  
 )

3,556,932 (Coscia , 1971 1 19 ) { 3,556,933 (William  
 s , 1971 1 19 ) } 가  
 Co. (PAREZ ( 631NC, )  
 , American Cyanamid

가  
 ,  
 ,  
 (permanent wet strength resin)  
 0.1 5%, 0.2 2%, 가 0.05 10% (  
 0.3 1%)  
 가 ,  
 ,

가  
 : 4,981,557 (Bjorkquist, 1991 1 1 ), 5,008,344 (Bjorkquist, 1991 4 16 ),  
 5,085,736 (Bjorkquist, 1992 2 4 ), 5,138,002 (Bjorkquist, 1992 8 11 ), 5,217,576  
 (Van Phan, 1993 6 8 ), 5,656,746 (Smith , 1997 8 12 ), 5,690,790 (Headlam , 1997  
 11 25 ), 5,698,688 (Smith , 1997 12 16 ), 5,760,212 (Smith, 1998 6 2 ),  
 5,262,007 (Phan , 1993 11 16 ).

가 가 ,  
 ,  
 (softening agent)  
 가 : 5,059,282 (Ampulski , 1991 10 22 ), 5,215,626 (Ampulski



[ 1 ]

	log K <sub>1</sub>	log K <sub>2</sub>	log K <sub>3</sub>	log K <sub>4</sub>	log K <sub>5</sub>	log K <sub>6</sub>
	9.27			33.03		
(III)		24.3	36.7	38.3		
[AsO <sup>+</sup> ]	14.33	18.73	20.60	21.20		
	9.7	14.0	15.2			
(III)	12.7	15.8		35.2		
(III)	14.6					
(IV)	13.28	26.46				
(III)	10.1	17.8		29.9		
(II)	7.0	13.68	17.00	18.5		
	11.0	21.7		34.3	38.0	40.3
	9.9	19.8		28.7		
(III)	11.87	21.17	29.67			
(II)	7.82	10.85	14.58			61.0
(IV)	12.39					
(IV)			41.6	53.0	64.8	72.0
(III)	12.86	25.37				
(III)	12.71					
(IV)	13.3				41.2	
(III)	11.1	21.6				
(V)[VO <sup>3+</sup> ]		25.2		46.2	58.5	
	4.40	11.30	14.14	17.66		
	14.3	28.3	41.9	55.3		

{ , a - Lange 's Handbook of Chemistry, 14 , McGraw - Hill, Inc., 1992 }

100 % ( 0.01 80 % , 가 0.1 70 % ) 0.001

2.

09/643,903 ( - 2000 8 21 )

(D L) 가 2가 ( ) 2가  
 가가 , 2가 (blend) . L

D : D - , 5 - - (+) - 2 - -  
 5 - , (+) - , (R) - 2 - - 5 - , 5 - - D - , D - 2 - - 5 - ,  
 D - , D - , D -

L : L - , 5 - - (-) - 2 - - 5 -  
 , (-) - , (5S) - 2 - - 5 - , (S) - (-) - 2 - - 5 - , (S) - 2 -  
 - 5 - , (S) - 5 - - 2 - , (S) - , 2 - L - - 5 - , 2 -  
 - 5 - , 5 - - 2 - , 5 - - L - , 5 - , 5 - - 2 - ,

L-5-, L-2-, -5-, L-5-, -2-, L-5-, -2-,  
L-, L-, , L-, L-, L-, L-,  
L-, PCA, -5-

DL (D L ) : DL-, 5- -  
(±)-2- -5-, (±)-, 5- -DL-, DL-2- -5-, DL-  
2- -5-, DL-, DL-, DL-, D  
L Ajidew (F) A100

가 , Barnet Products Corp. ( ) UCIB ( )  
Pidolidone (F) , Ajinomoto Corp. Ajidew (F) A100

가 ( ) UCIB ( ) Nalidone (F) , Barnet Products Corp. ( )  
Ajidew (F) NL-50 Ajinomoto Corp. Ajidew (F) N-50  
PCA, PCA가 PCA,

가  
, 1 4 , C<sub>2</sub>  
, 가 ( , , )  
, C<sub>1</sub> C<sub>12</sub> - , , 2- , 2-  
, 2- , 2- , 2- , 2-  
2- , 2- , 2-

, 1 4 , C<sub>3</sub>  
, 가 ( , , , )  
, C<sub>1</sub> C<sub>12</sub> - , , 3- , 3-  
, 3- , 3- , 3- , 3- , 5- , 3-  
3- , 3- , 3-



X , .

(5) , PROCETYL AWS (Croda Inc., ) (20) .

- 12 ( 12 ) , Tomadol 25 - 12 (Tomah Products Inc., ) Noedol 25 ; Shell Chemicals, C<sub>12</sub> - C<sub>15</sub> C<sub>12</sub> - C<sub>15</sub> .

- , TERGITOL 15 - S - 9 ( 9 C<sub>11</sub> - C<sub>15</sub> ; Union Carbide Corporation, ), NEODOL 23 - 6.5T ( 6.5 C<sub>12</sub> - C<sub>13</sub> ), PLURAFAC (BASF Corp., ; , 27 PLURAFAC A - 38) C<sub>18</sub> .

- , Imperial Chemical Company (ICI) , BRIJ 76 ( , Steareth - 10) BRIJ 56 ( , Ceteth - 10) BRIJ .

4,011,389 - Langdon , 1977 3 8 ); ( , PEGOSPERSE 10 00MS, Lonza Inc. ); 가 2 20 ( 2 ( 10) C<sub>12</sub> - C<sub>18</sub> - , - / - { , TWEEN 60 ( 가 20 ), TWEEN 20 ( 가 20 ) } TWEEN 61 ( 가 4 ) .

(Cytec Industries Inc., )가 , AEROSOL OT ( , General Electric )가 , General Electric SF 1188 ( ) SF 1228 ( ) .

가 0.2 , 0.01 10 % ( ), 0.1 5 %, 2 %가 .

1. (moisture barrier)

5,968,853 (Kelly , 1999 10 19 ), 09/120,828 ( : 1998 6 22 ), 09/287,857 ( : 1999 4 7 ) .

1,599,875 (Sweens , 1981 10 7 ) EP 0144658 (Endres, 1 985 6 9 ) .

, : 6,054,020 (Goulet , 2000 4 25 ), WO  
97/41301 (McFarland , 1997 11 6 ), WO 00/00698 (Hsu , 2000 1 6 ), 2,239,927  
(McCullough, 1999 1 1 ).

/ (ply bonding) :  
3,414,459 (Wells, 1968 12 3 ), 3,867,225 (Nystrand, 1975 2 18 ), 4,481,24  
3 (Allen, 1984 11 6 ), 5,294,475 (McNeil, 1994 3 15 ).

2. (polyhydric alcohol)

, ( , ) ,  
, 1,2 , 1,2 ,  
, ( , )  
, 0.1 99 % ( , ) , 5 90  
%, 20 80 %가 .

3.

09/342,777 ( : 1999 6 29 )

4.

5 80 % ( , ) , 0.5 70 % , 5 60 %가  
0.001 100  
% ( , ) , 0.01 80 % , 가  
0.1 70 %가 .

: 4,11  
2,167 (Dake , 1978 9 5 ), 4,481,243 (Allen, 1984 11 6 ), 4,513,051 (Lavash, 1985  
4 23 ), 5,525,345 (Warner , 1996 7 11 ), 5,716,692 (Warner , 1998 2 10 ),  
5,830,487 (Klofta , 1998 11 3 ), 09/041,231 ( : 1998 3 12 ).

: 5,  
059,282 (Ampulski , 1991 10 22 ), 5,164,046 (Ampulski , 1992 11 17 ), 5,385,643  
(Ampulski , 1995 1 31 ), 5,389,204 (Ampulski , 1995 2 14 ), 5,814,188 (Vinson  
, 1998 9 29 ).



, R<sub>1</sub> R<sub>9</sub> ; R<sub>10</sub> 가  
 , ; R<sub>10</sub> 가 ;  
 , / R<sub>10</sub> ( )  
 가 , R<sub>10</sub> ,

, General Electric( ) CM 849 .

, 25 20,000,000 (centistoke) 가 ,  
 ) ( ,

18 % ( , 0.01 40 % ( ) . ( , " 가 ) . , 0.5

, - " - (non-uniform)" ,

- 가 가  
 { : 4,481,423 (Allen, 1984 11 6 ) }  
 5,814,188 (Vinson , 1998 9 29 )}.

2 - , 2 .3 - 2 ,  
 , 2 가 .

, ( , ) , ,  
 가 , .

가 ,  
 , 가 .

ing) ( , ) , Yankee (calender)  
 가 (parent roll) 가 ,

(gravure coating) (extrusion coating)  
5,246,546 (Ampulski, 1996 9 21 )  
(extrusion coating)

(gravure coating)

가  
, 1998 9 29 )

5,814,188 (Vinson

(1998 2 24 ) 5,814,188 (Vinson , 1998 9 29 ) 4,481,243 (Allen, 1984 11 6 ), 5,720,966

), ( , (dipping), (soaking), ( , )

가  
{ : 4,481,243 (Allen, 1984 11 6 )}.

0.1 25 %, 0.2 15 %) , 0.05 50 % ( pH , 6  
5 , 가 4

가 14 ( , " RV - 14" ) , Buchner 1 . 1 (aliquot) , 10

가

가

(stock virus)

14 (rhinovirus) 1059 , American Type Culture Collection (ATCC) ( V  
R - 284 , Rockville, MD)

, 75 100%

(supernatant)

- 70

( ), 4 30 60 100,000RPM

E - MEM

(aliquot) ,

CRL - 1958 ) 4 (quadruplicate) 10 - , H1 - Hela (ATCC  
가

- , H1 - Hela (ATCC CRL - 1  
958 ) . H1 - Hela , 10% FBS 1% PSG가 E - MEM . E -  
MEM , Life Technology, Inc. (Rockville, MD) (Gibco BRL 10370 - 021 )  
(Earle , - ; L - ) ; FBS Life Technology, Inc. (Rock  
ville, MD) (Gibco BRL 16140 - 071 ) ; PSG Life Technology,  
Inc. (Rockville, MD) (Gibco BRL 10378 - 016 ) - -

, 5 7% CO<sub>2</sub> 가 36 - 38

, 10% (Bovine mucin) (Sigma Aldrich M - 4503 ) 1% PSG가  
E - MEM . E - MEM , Life Technology, Inc. (Rockville, MD) (Gibco BRL 10370 - 02  
1 ) (Earle , - ; L - ) ; PSG Life Te  
chnology, Inc. (Rockville, MD) (Gibco BRL 10378 - 016 ) - -

, 1% PSG가 E - MEM . E - MEM , Life Technology, Inc. (Rockville, MD) (Gibco BRL 10370 - 021 ) (Earle , - ; L - ) ; PSG Life Technology, Inc. (Rockville, MD) (Gibco BRL 10378 - 016 )

$56 \pm 0.5 \text{ mm}$

Buchner

(pre - weighted) 2 Buchner (replicate) 56mm - Buchner ( 60240 ; Coors,

250mm - Bucher 가 Buchner , Buchner (arm)

10% (Bovine mucin) (Sigma Aldrich M - 4503 ) 1% PSG가 E - MEM (500 $\mu\ell$ ) , 1 3M $\ell$

15 가 , Buchner (10<sup>-1</sup> ) , 10 (0.3ml + 2.7ml ) , Buchner ( )

10% FBS 1% PSG가 E - MEM (500 $\mu\ell$ ) , 1 E - MEM 3M $\ell$

15 가 , Buchner 가  
 , log . Buchner 가

4  
 , 2  
 ( , TCID<sub>50</sub> )  
 TCID<sub>50</sub> - TCID<sub>50</sub> "  
 " %  
 " " :

$$(\%) = (A - B)/A * 100$$

{ , A = - TCID<sub>50</sub> ( /ml); B = TCID<sub>50</sub> ( /ml) }

A = 10<sup>6</sup> /ml B = 10<sup>2</sup> /ml ,  

$$= (10^6 - 10^2)/10^6 * 100 = 99.99\%$$

가 가  
 가  
 (tissue panel softness)

	10	35%	22	40	Tappi 24	# T402OM - 88	(conditioning)
	48	52%	22	24	24		

가 가

(paired comparison) { : " Manual on Sensory Testing Methods" , ASTM Special Technical Publication 434, American Society for Testing and Materials, 1968} . , Paired Difference Test (subjective testing)

2  
 (PSU)

PSU 가 6 X , Y . 10  
 1 Y X , Y , X  
 :

- 1. X가 Y +1, Y가 X - 1;
- 2. X가 Y +2, Y가 X - 2;
- 3. X가 Y +3, Y가 X - 3;
- 4. X가 Y +4, Y가 X - 4.

PSU  
 0(zero) - 0(zero) PSU  
 (+) (-) 가 0- 가  
 0.2 PSU가

1

1

1

Puffs (F) Advanced Extra Strength

(slot extrusion)

2 ( )

1

fs (F) Advanced Extra Strength ( , 48.8%(wt/wt) Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> ) 가 , Puf  
 - , Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> 10 %가 1 가

2

fs (F) Advanced Extra Strength ( , 48.8%(wt/wt) Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> ) 가 , Puf  
 - , Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> 5 %가 1 가

3

fs (F) Advanced Extra Strength ( , 48.8%(wt/wt) Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> ) , Holland Company ( ) 가 , Puff ( , Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> 2 %가 120 가 1 가

4

25 - 12 0.1 %가 Tomadol 25 - 12 0.5 % Tomadol 25 - 12 (Tomah Products Inc., Advanced Extra Strength ) , Holland Company ( ) 가 , Puffs (F) Tomadol (shaft mixer) 48 , Puffs (F) Tomadol 10 % Tomadol 120 가 1 가

5

가 - 가 , 4 5 % Tomadol 25 - 12 0.05 %가

6

가 - 가 , 4 2 % Tomadol 25 - 12 0.02 %가

7

(Mallinckrodt, Paris, Kenturcky) (shaft mixer) , 120 가 , 5 % (cupric sulfate pentahydrate) , Puffs (F) Advanced Extra Strength (cupric sulfate) 0.7 %가 가 1 가

8

- 가 , 7 0.35 %가 가

9

- 가 , 7 0.15 %가 가  
 1 가 14

[ 1]

14 ( - 1 )

[ 2]

	a		가 a	(%)
	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	CuSO <sub>4</sub>	Tomadol 25 - 12	
1	11.6	-	-	99.97
2	7.4	-	-	98.53
3	2.8	-	-	87.94
4	8.2	-	0.08	99.54
5	5	-	0.05	97.40
6	2.6	-	0.026	97.81
7	-	0.61	-	90.56
8	-	0.31	-	68.38
9	-	0.15	-	64.16

{ , a - 가 (%)}

2

2 , Puffs (F  
 Advanced Extra Strength (slot extrusion) 1 2  
 ( ) , -

1

- , Holland Company ( ) 가  
 ( , 48.8%(wt/wt) Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> 3810g Procter & Gamble Co. ( )  
 ) 가 (99.77% USP Kosher Stock #51430) 4000g 12 -  
 , 30 Hg , 55  
 가 , 2  
 2 , 70 가 , 2 30 가  
 (ice bath) 1 - ,  
 (cold trap) (batch) , 1864g  
 , 31.4%



6

- 가 , AACH - 7171 2 %가 가

7

it Research Labs, ) 3810g (99.77% USP Kosher Stock #51430;  
Procter & Gamble Co. 가 ) 4000g 12 - ( AZG - 417, Summ

3 1 가 .2 30 Hg ,55 가 ,2 70 가 , 2 30 (ice bath) (cold trap) (batch) 1645g 30.9%

anced Extra Strength ,200 가 , Puffs (F) Adv 가 , AZG - 417 10 %가 가

8

- 가 , AZG - 417 7 5 %가 가

9

- 가 , AZG - 417 7 2 %가 가

1 , - 가 14

[ 2]

14 - ( - 1 )

[ 3]

	a			
	A <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	-7171	AACH	(%)
1	10	-	-	99.8415
2	5	-	-	99.8415
3	2	-	-	80.0474
4	-	10	-	99.4988
5	-	5	-	90.0000
6	-	2	-	0
7	-	-	10	94.9881
8	-	-	5	90.0000
9	-	-	2	84.1511

{ , a - 가 (%)}

3 , 1 1 1 , 1 2 2 , 2 1  
 2 2 2 ( , Puffs ( Advanced Extra Strength ) (panel softne  
 ss data)가 ,

[ 3]

a

[ 4]

	vs 1	vs 1	vs 2	vs 2
(PSU)	1 (PSU)	2 (PSU)	1 (PSU)	2 (PSU)
0.0	- 1.46	- 1.11	+ 1.53	+ 1.01

{ , a 40 }

가 , 가

(57)

1.

(a) ;

(b) 가 10<sup>12</sup> ,



(b) 1 가 ; 가  $10^{12}$  1

(c) 2 1 (face to face relationship) , 2 1 가 2 1 , 2 .

10.

9 , 가 가 .