

(19) (KR)  
(12) (A)

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	15205	100
(72)	,	,
	15108	2534
	,	,
	15241	458
	,	,
	15205	257
	,	,
	15317	111

(74)

(54)

P M D I

) 121 (250 )

, , ( ) , , -

( ) 121 ( 250 )

120 225  
가 2 20 %

4 12 % ( )

가

가

가 , , , 1980 9 23 25

(" Wood Adhesives - Research, Applications and Needs" )

(James B. Wilso

n " Isocyanate Adhesives as Binders for Composition Board" )

가

가

2,109,686

3,870,665

( )

( ) (" MDI" )

가

[ , 3,666,593 , 5,008,359 , 5,140,086 , 5,143,768 5,204,176 ]

[ , 4,617,223 5,332,458 ]

가

가

가

가

가

4,100,328

4,609,513

가

5,179,143

가

( ,

3 8% )

4,546,039  
20%  
15 33.6 %  
(1) 가가 2 8  
62 25 120  
1000 mPa · s  
0.05 0.5  
(2) (a) 25 90 %  
(b) 2,4 10 75 % 4,4 25 90 %  
50 100 % 1

2,143,883 MDI 1 가 62 6,000  
10 50 %

(MDI)

4,684,489 , 4,393,019 , 4,850,849 4,517,147 . 가

가

가

5,128,407

50 5,744,079 . (A) MDI PMDI , (B)  
160 . (C) (D)

가

가

가

가 가

3 - 21321

4 - 232004

가

	5,179,143	5,674,568	5,179,143
,2			
5,674,568			( ), ,
가 2 8	60	8000	가 ,

4,414,361

121 (250 )

가		
가		
가		

	5,140,086	5,280,097
8	20	%

가

가

가

&lt; &gt;

A)

, B) A)

49 kg/m<sup>2</sup> (300 140613 703070 kg/m<sup>2</sup> ( 200 1000 psi) ( 210920 4921  
 150 700 psi)) 2 10 ( 4 8 ) 120 225 ( 100  
 200 A)

(1) (a) NCO 30 33% ( ), 가 ) , 가 20  
 2,000 cps 25 65 % ( 2,2 ' - 5 30 % , 2,4 ' - 90 % 1 20 % 3.5  
 NCO 30 33% ( 2,2 ' - 5 30 % , 2,4 ' - 90 % 1 20 % 4.4 ' -  
 25 65 % ( )

(b) NCO 0.5 25 33% ( 2,000 cps ) - ( )  
 0.5 6% 가 20 ( ) ( ) ;

(2) 121 (250 ) , 162 (325 ) , 가 190 (375 )

80 50 %, 60 (1) 75 (2) 100 % 50 95 %, 50  
 5 50 %, 20 50 %, ; (1) 40 %, 100 %

, 1.5 7 %, 2 6 %

, " " , 가 "

0.1 % 2 % , 1 % " " , 가 "

% , (1) 20 2,000 cps ( ) (a) NCO 30 33  
 (b) NCO 25 32% ( )

0.5 6% 20 2,000 cps 20 20, 400 cps,  
 가 ( 20 40 ) 250 cps .

가, 30 33%, 2.1 3.5, 2.3 3.0, 2.6 2.8  
 40 70 % 가 , 1 20 % 2,4' - 30 60 % MDI 30 90 %,  
 5 2,2' - , 30 60 % . 25 65 % 4, 1  
 4' - 0 70 %, . 30 60 % . 25 65 % 4, 1  
 4,4' - 45 % MDI . . . . . .

CO 55 80 % 2.2 2.4 2.4 31.2 32.8 % N  
 3 % 2,2' - , 15 가 , 20 % 2,4' - 40 55 %  
 4,4' - 45 % MDI . . . . . . 20

가 , NCO 30 32 % , 가 가 2.5 3.0, 2.6 2.8  
 2 ) 10 % 2,4' - 35 45 % 4,4' - 50 60 % MDI ( 2,2' - ,  
 . . . . . . . . . . . .

, (1)(a) , 5,319,053 , 5,319,054 5,440,003 MD  
 | , 2,853,473 , 2,941,966 , 3,152,162  
 , 4,088,665 , 4,294,719 4,244,855 MDI MDI 가  
 . . . . . . . . . . . .

가  
 5,349,082

(1)(b) ( ) 0.5 6% NCO  
 25 30 % - - - 0.5 6% NCO  
 20 2,000 cps - - - ( 1), (1)(a) (1)(a)  
 ), (1)(a) , 5,462,766 5,714,562 ( 1), (1)(a) ( 1)  
 . . . . . . . . . . . .

6,000 MDI, (1)(a) 1 가 62  
 1 8 가 62 6,000  
 0.004:1 0.1:1 . . 0.001:1 0.20:1,  
 MDI MDI

MDI MDI MDI 가

2 8 , 가 2 4 1 62 , 8,000,  
100 5,000, 가 100 2,000 가 .  
1

가

가 0.001:1 0.20:1, 0.004:1 0.1:1, 가  
0.005 0.02:1 .

가

- 20 2,000 cps , 20 1,000 cps  
- , - NCO( , ) 25 33% .  
, (1)(b) - 27 31% NCO , 1 4%  
20 1,000 cps .

가 . (1)(b) - (2)  
10 2,000 cps, 50 1,000 cps 가 100  
700 cps

162 (325 ) , 가 190 (375 ) 121 (250 ) , 가

, 1 % , 가 0.1 % 2 % (pbw)  
가 가 , .  
가 .

가 가 ,  
50% 50% ,

가 (II) (" Kunststoff Handbuch" , Volume VII, Becker Braun , Carl Hanser Verlag, Munchen, 1983, pp.92 - 98) 0.001 10 %, 0.002 0.1 % . . . . .

가 ( )  
가 , , , ,

40 % , 25 % , 가 4 12 % ( )

(1) (2)

가

가

%

A: 가 25 200 mPa · s 31.5% MDI(PMDI)  
(Mondur) ( ) 541

A: ( ) 885 가 25  
105 mPa · s

B: 가 25 56 mPa · s (Kodaflex) ( ) DOP  
(Eastman Kodak Company)

C: 가 25 58 mPa · s (Sundex) ( )  
840 (Sun Company)

D: , 가 25 35 mPa · s 8%  
가 (Sigma Aldrich)

E: 가 20 50 mPa · s (Klorowax) ( ) 40 - 40  
(Ferro Chemical)

F: 가 20 1400 mPa · s ( ) 60 - 50

G: 가 20 120 mPa · s ( )

/

1000 rpm A (jar) 가 , 1 2 가  
15 , ,

(KitchenAid KSM90  
가 5 )  
가  
가 10  
20.32 cm × 20.32 cm(8  
ress)(PW - 22 )  
가 , 4 ½  
× 8 )  
1.27 cm(1/2 )  
PHI  
(Hydraulic P  
, 176.7 (350 )

ASTM D 1037  
well) 가 (Internal Bond Strength and Thickness S  
(" Evaluating Properties of Wood - Based Fiber and Particle Panel Materials" ).

2 30  
(Coil Manufacturing Systems Rotary  
(Casco - wax)(Borden Chemicals, Inc. )  
가 , OSB 1% w/w 가  
10 15  
30  
- (Newman Hydra - Press Model) HP - 188  
가 2  
5 , 421842 kg/m<sup>2</sup> (600 psi) 70307 kg/m<sup>2</sup> (100 psi) 2.  
3.81 cm(1.5 )

ASTM D 1037  
s of Wood - Based Fiber and Particle Panel Materials" ).

[ 1 ]

%	1 : A - 0%	2 A - 20%	3 A - 35%	4 A - 40%	5 A - 50%
(g) <sup>1</sup>	373.24	370.43	363.29	373.27	363.29
A(g) <sup>1</sup>	18.48	14.62	11.77	11.09	9.06
A(g) <sup>1</sup>	0	3.7	6.34	7.39	9.06
( % ) <sup>1</sup>	356.1	353.38	346.73	349.43	346.73
( % ) <sup>2</sup>	6.30	5.50	5.58	6.31	5.58
(lb/ft <sup>3</sup> ) <sup>3</sup>	40.2	40.4	41.4	40.1	40.6
(psi) <sup>4</sup>	240	265	234	202	158
(%) <sup>5</sup>	10.5	10.9	13.7	10.6	14.9
<sup>1:</sup>	5	<sup>2:</sup>	ASTM	E871 - 82	<sup>3:</sup>
<sup>4:</sup>	IB	<sup>5:</sup>	가 9		2

[ 2 ]

%	6 B - 29%	7 C - 20%	8( ) %	D - 35	9 E - 30%	10 F - 30%
(g) <sup>1</sup>	364.29	363.12	363.29	363.12	363.12	363.12
A(g) <sup>1</sup>	18.48	14.49	11.77	12.68	12.68	12.68
A(g) <sup>1</sup>	0	0	0	0	0	0
B(g) <sup>1</sup>	7.39	0	0	0	0	0
C(g) <sup>1</sup>	0	3.62	0	0	0	0
D(g) <sup>1</sup>	0	0	6.34	0	0	0
E(g) <sup>1</sup>	0	0	0	5.43	0	0
F(g) <sup>1</sup>	0	0	0	0	5.43	5.43
(g) <sup>1</sup>	354.68	346.57	346.73	346.57	346.57	346.57
<sup>1:</sup>	5	<sup>2:</sup>	ASTM	E871 - 82	<sup>3:</sup>	
<sup>4:</sup>	IB	<sup>5:</sup>	가 9		2	

[ 3]

%	6 B - 29%	7 C - 20%	8( ) %	D - 35	9 E - 30%	10 F - 30%
(g) <sup>1</sup>	354.68	346.57	346.73	346.57	346.57	
( %) <sup>2</sup>	5.97	5.53	5.58	5.53	5.53	
(lb/ft <sup>3</sup> ) <sup>3</sup>	41.5	40.3	41.8	40.1	40.4	
(psi) <sup>4</sup>	222	205	227	197	185	
(%) <sup>5</sup>	11.8	11.7	16.1	14.0	13.9	

1: 5 . 2: ASTM E871 - 82 . 3:  
 : 5 . 4: IB 가 9 . 5: 2

[ 4]

%	11	12 G - 29%
OSB (g) <sup>1</sup>	17757.33	17757.33
A(g) <sup>1</sup>	837.61	837.61
G(g) <sup>1</sup>	0	335.0
가 (g)	167.52	167.52
(g) <sup>1</sup>	17056.78	17056.78
( %) <sup>2</sup>	6.00	6.00
(lb/ft <sup>3</sup> ) <sup>3</sup>	42	42
(psi) <sup>4</sup>	122	136
(%) <sup>5</sup>	5.7	4.4

1: 1 OSB . 2: ASTM E871 - 82 . 3:  
 . 4: IB 8 . 5: 2

(57)

1.

A)

(1) (1) (2) 100 %

(a) NCO 30 33 % ( )

(b) NCO 25 33 % 50 95 %; ( ) -

(2) (1) (2) 100 % 5 50 121 (250 ) 가  
 가 1.5 7 % ;

B) A)

2.

1 , 2 6 %

3.

1 ,

(1) (1) (2) 100 % 50 80 %

(2) (1) (2) 100 % 20 50 %

4.

1 ,

(1) (1) (2) 100 % 60 75 %

(2) (1) (2) 100 % 25 40 %

5.

1 , 162 (325 )

6.

1 , 190 (375 )

7.

1 , 偈

8.

1 , 118 221 ( 245 430 ) 140613 703070 kg/m<sup>2</sup> (200 1,000 psi) 28 , 221 ( 300 430 ) 210920 492149 kg/m<sup>2</sup> (300 700 psi) 4 8  
148

10.

1 , (1) (a) NCO 30 33 % ( )  
 20 2,000 cps .

11.

1 , (1) (a) NCO 30 33 % ( ) 가  
 2.1 3.5 90 % , 20 25  
 2,2' - 5 % , 2,4' - 1 % 4,4' -  
 65 % .

12.

1 , (1) (b) - 0.5 6% 20 2,000 c  
 ps .

13.

11 , (1) (b) - , ( ) ( ) 1  
 ( ) .

14.

1 , (2) , (ii) 가 (i) 8 24 1 24  
 - . (iii)

15.

14 , 가 .