고습도하에서 판지의 층간결합 향상

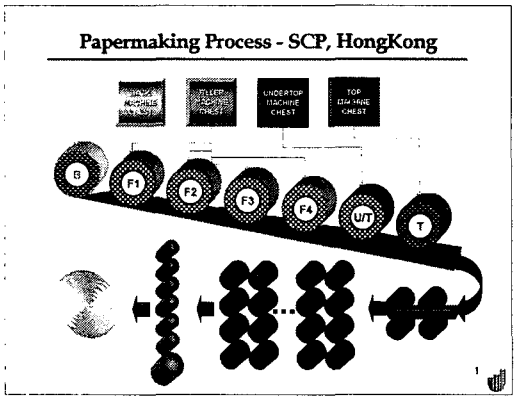
조태철[1] · Tammy Tsui[1] · 최원희[2] · 조미선[2] · **신종호**[2] · 박민태[2]

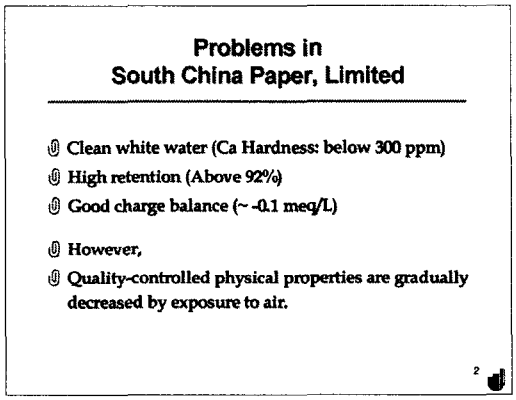
Ply-bond Strength Improvement of Duplex Board under High Humidity

Tae-Cheol Cho[1] · Tammy Tsui[1] · Won-Hee Choi[2] · Mi-Sun Cho[2] · **Jong-Ho Shin**[2]* · Min-Tae Park[2]

다층 판지의 층간 결합력을 향상시키기 위한 목적으로 전분을 내첨 또는 스프레이 하여 사용하고 있다. 그러나 전분을 층간결합 증강제로 사용하여 제조된 다층 판지는 높은 습도 하에서 보관하게 되면 제조 당시 혹은 항온 항습조건에서 보관된 경우에 비해 층간결합이 현저하게 감소하는 현상이 나타나고 있다.

본 연구에서는 이러한 문제점을 개선하기 위하여 새로운 층간결합 증강제를 개발하였으며, 이를 내첨과 스프레이 방식으로 실험실 수초지와 현장 초지기에서 적용한 결과, 높은 습도 하에서 보관하여도 층간 결합력을 유지, 강화시키는 결과를 얻을 수 있었다.





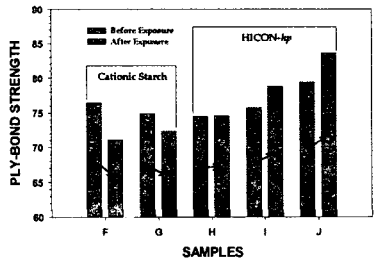
Experimental Scope in South China Paper, Limited

HICON-*hp*

- To increase ply-bond of white duplex board.
- To provide a humidity-resistance to the paper.
- To reduce and/or replace an excess cationic starch.
- To use as a AKD fixing agent.

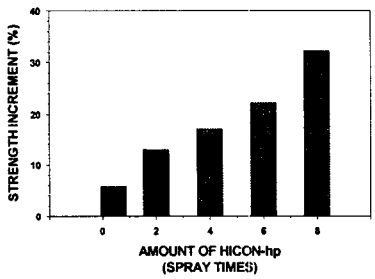
3

INTERNAL ADDITION - BEFORE & AFTER EXPOSURE TO HUMIDITY -



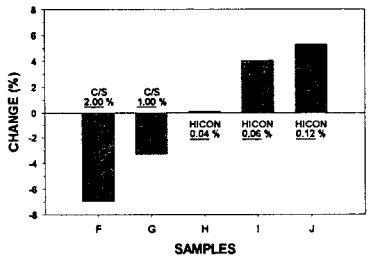
6

SURFACE ADDITION - EFFECT OF HICON-*hp* ON PLY-BOND STRENGTH -



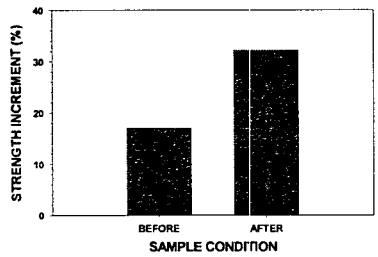
4

CHANGE OF PLY-BOND STRENGTH AFTER THE SAMPLES EXPOSED TO HIGH HUMIDITY



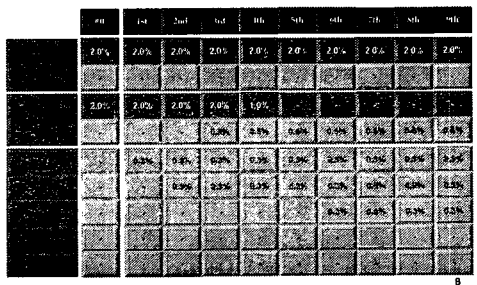
7

SURFACE ADDITION OF HICON-*hp* - EFFECT OF AIR-CONDITIONING AT HIGH HUMIDITY -



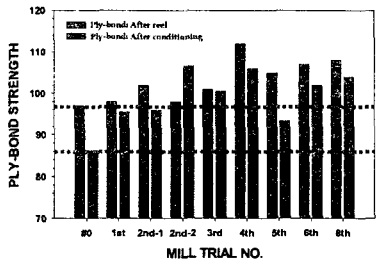
5

Procedure of Mill Trial (8~11 May 2002, South China Paper, Ltd., Hong Kong)



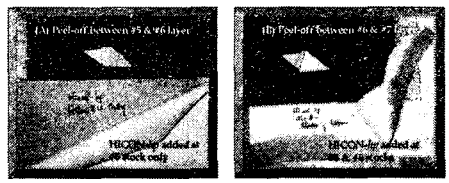
8

PLY-BOND STRENGTH BEFORE & AFTER CONDITIONING



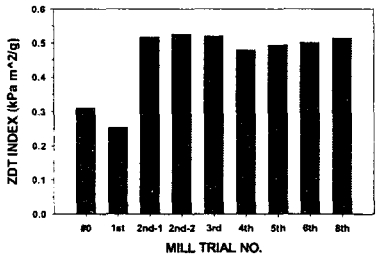
9

RI & Hand-Peeling Test



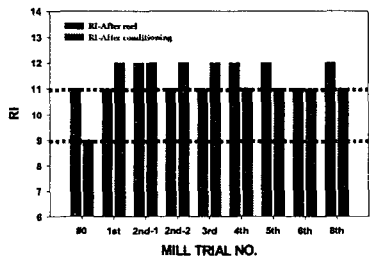
12

Z-DIRECTION TENSILE INDEX



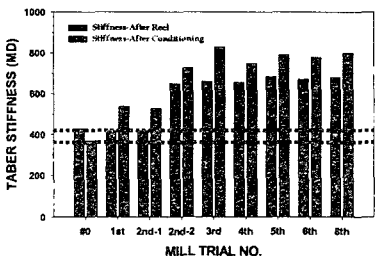
10

RI BEFORE & AFTER CONDITIONING



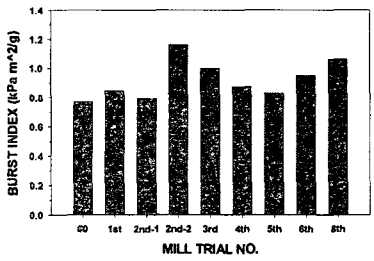
13

STIFFNESS BEFORE & AFTER CONDITIONING

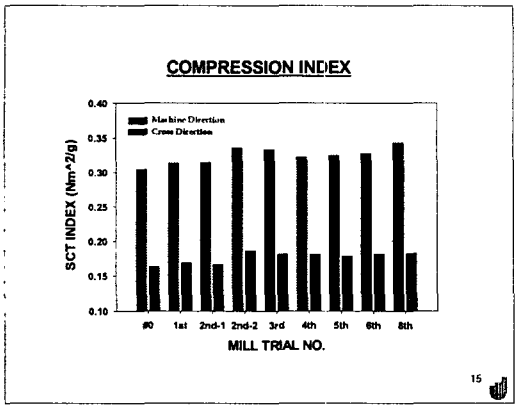


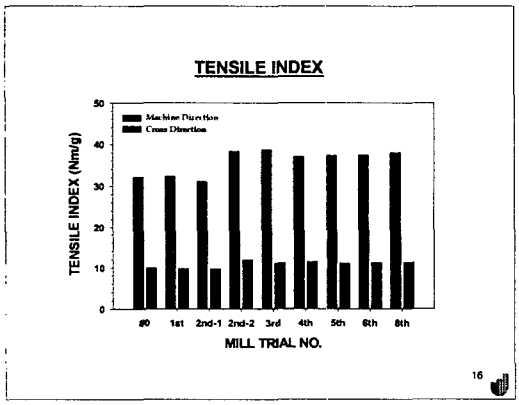
11

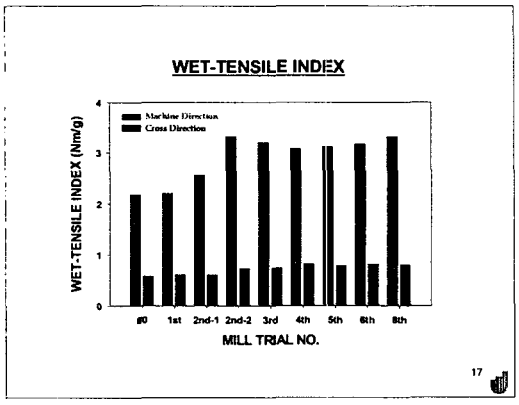
BURST INDEX



14


COMPRESSION INDEX
Machine Direction
Cross Direction
SCT INDEX (Nm^2/g)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
#0
1st
2nd-1
2nd-2
3rd
4th
5th
6th
8th
MILL TRIAL NO.
15


TENSILE INDEX
Machine Direction
Cross Direction
TENSILE INDEX (Nm/g)
50
40
30
20
10
0
#0
1st
2nd-1
2nd-2
3rd
4th
5th
6th
8th
MILL TRIAL NO.
16


WET-TENSILE INDEX
Machine Direction
Cross Direction
WET-TENSILE INDEX (Nm/g)
4
3
2
1
0
#0
1st
2nd-1
2nd-2
3rd
4th
5th
6th
8th
MILL TRIAL NO.
17