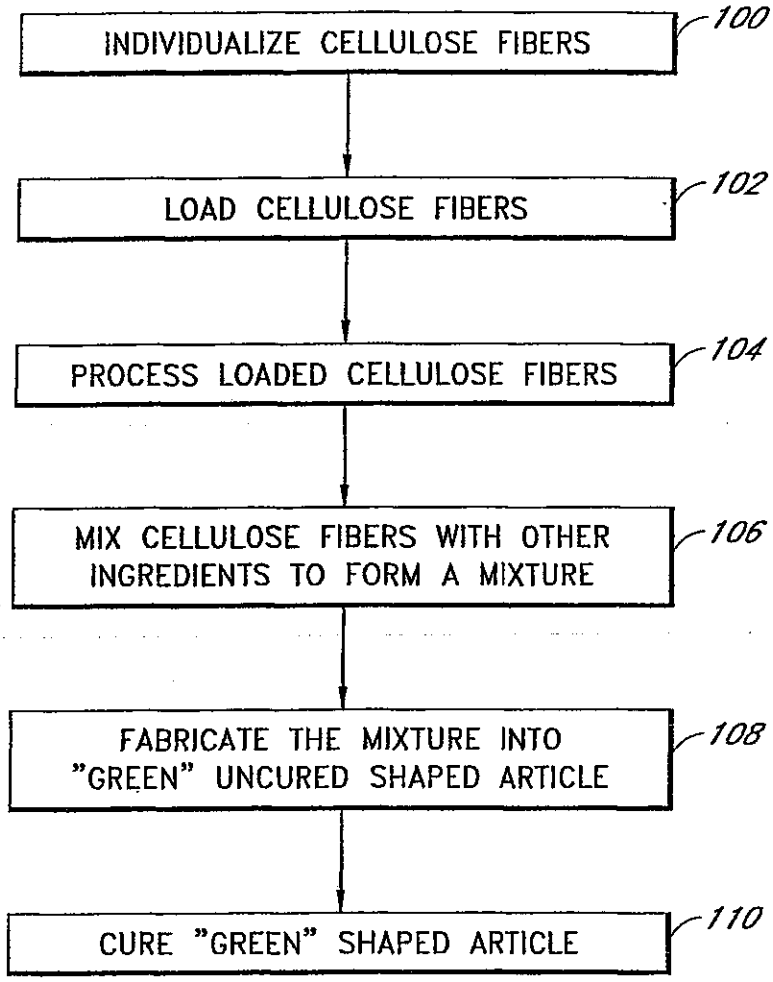
INDIVIDUALIZE CELLULOSE FIBERS
100
LOAD CELLULOSE FIBERS
102
PROCESS LOADED CELLULOSE FIBERS
104
MIX CELLULOSE FIBERS WITH OTHER INGREDIENTS TO FORM A MIXTURE
106
FABRICATE THE MIXTURE INTO "GREEN" UNCURED SHAPED ARTICLE
108
CURE "GREEN" SHAPED ARTICLE
110

FIG. 1

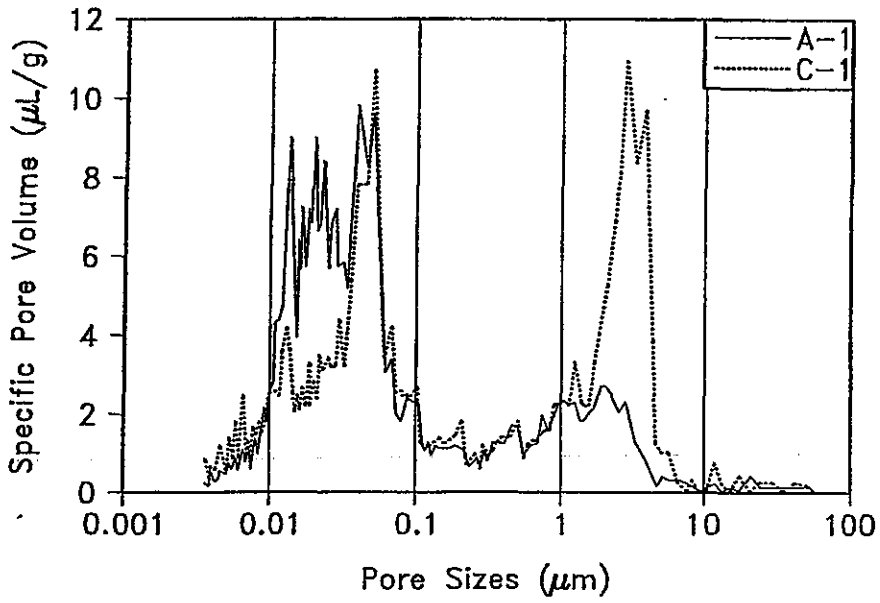
12
10
8
6
4
2
0
Specific Pore Volume (μL/g)
0.001
0.01
0.1
1
10
100
Pore Sizes (μm)
A-1
C-1

FIG. 2

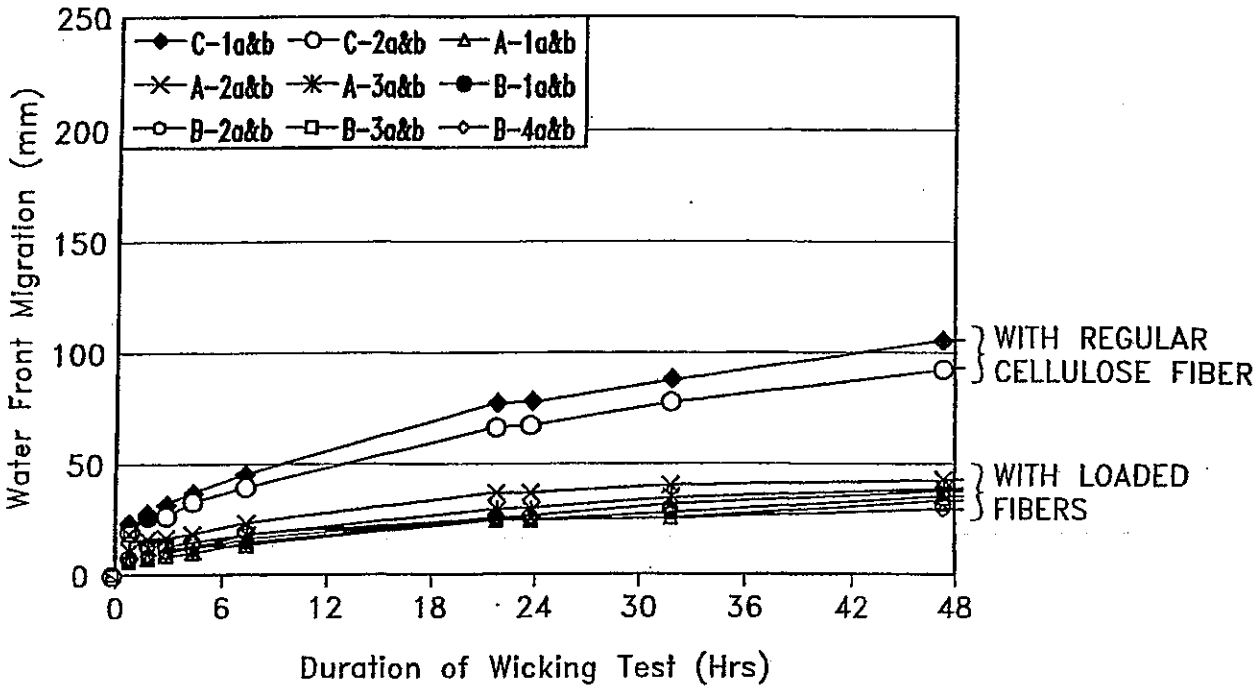
C-1a&b
C-2a&b
A-1a&b
A-2a&b
A-3a&b
B-1a&b
B-2a&b
B-3a&b
B-4a&b
Water Front Migration (mm)
250
200
150
100
50
0
0
6
12
18
24
30
36
42
48
Duration of Wicking Test (Hrs)
WITH REGULAR CELLULOSE FIBER
WITH LOADED FIBERS

FIG. 3A

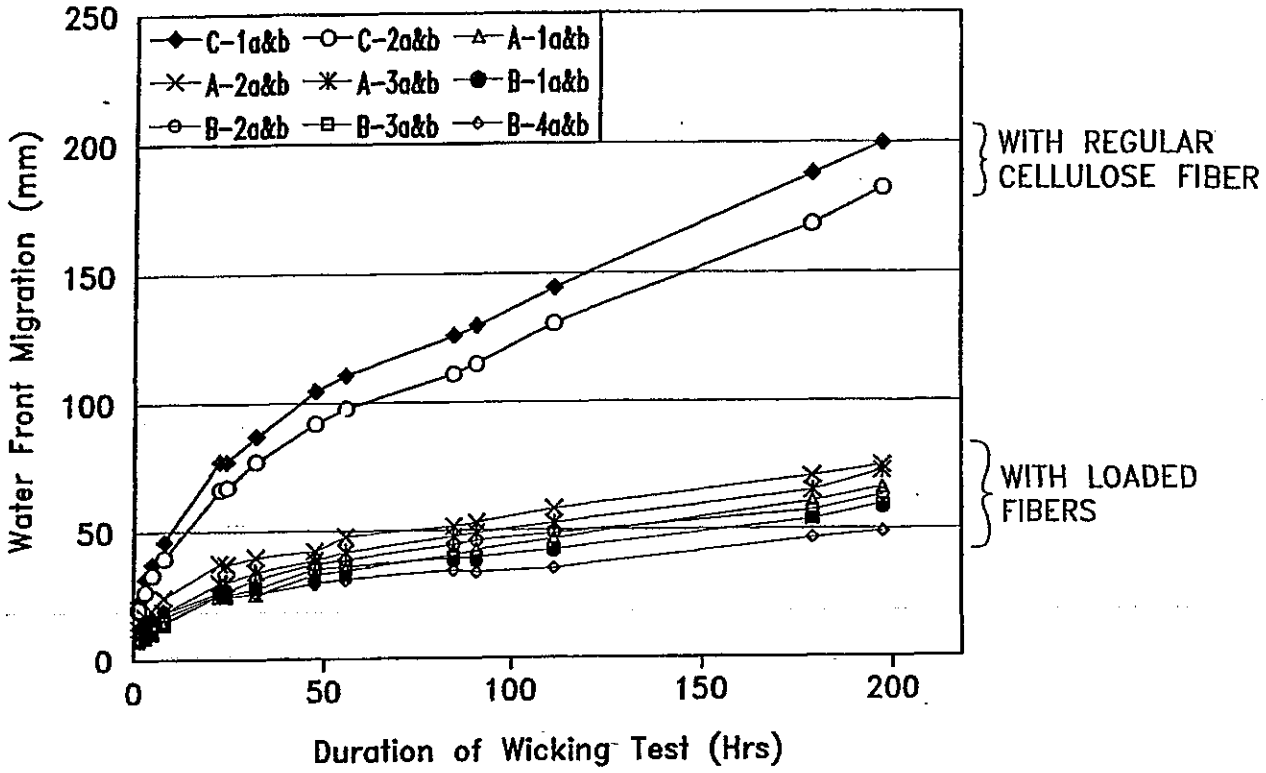
C-1a&b
C-2a&b
A-1a&b
A-2a&b
A-3a&b
B-1a&b
B-2a&b
B-3a&b
B-4a&b
Water Front Migration (mm)
250
200
150
100
50
0
0
50
100
150
200
Duration of Wicking Test (Hrs)
WITH REGULAR CELLULOSE FIBER
WITH LOADED FIBERS

FIG. 3B

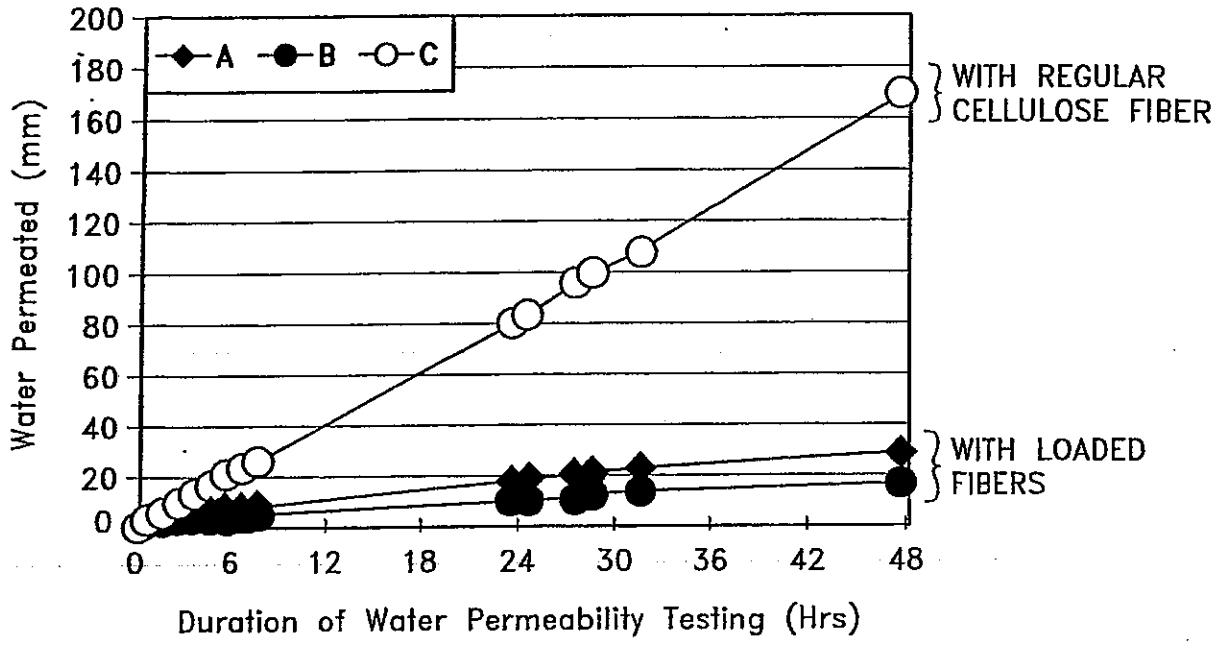
200
180
160
140
120
100
80
60
40
20
0
A
B
C
Water Permeated (mm)
0
6
12
18
24
30
36
42
48
Duration of Water Permeability Testing (Hrs)
WITH REGULAR CELLULOSE FIBER
WITH LOADED FIBERS

FIG. 4A

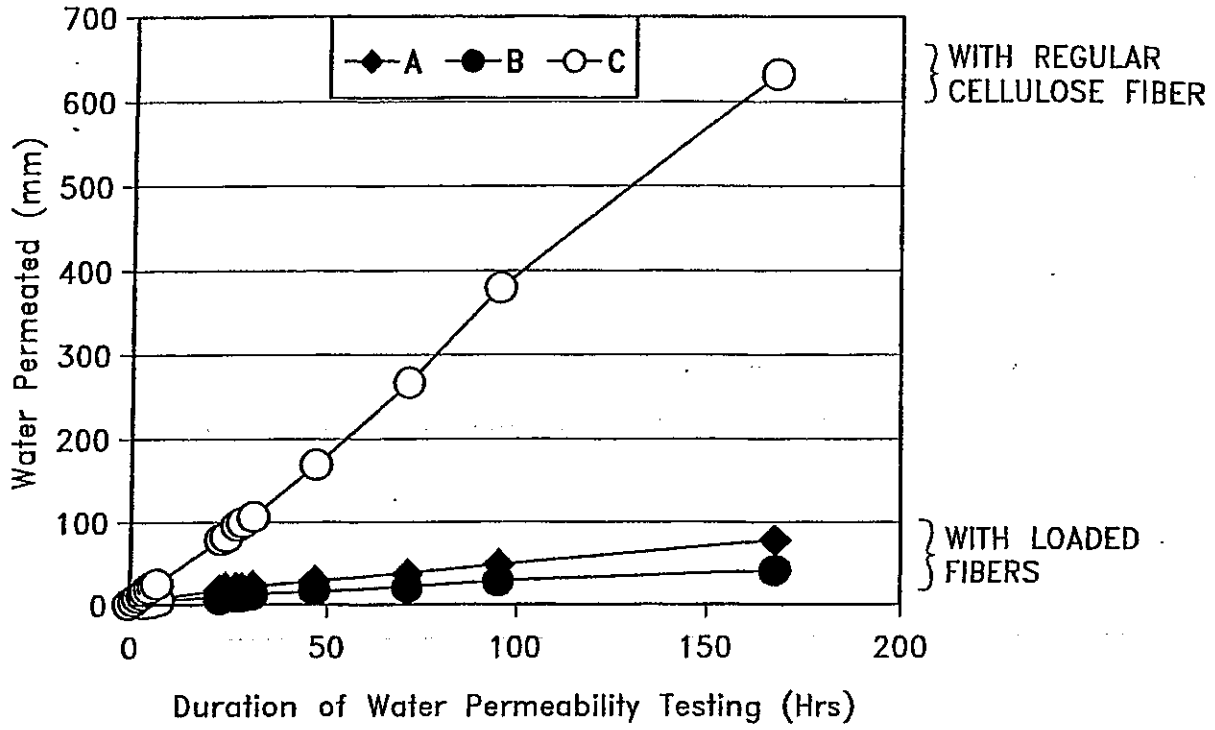
700
600
500
400
300
200
100
0
Water Permeated (mm)
A
B
C
0
50
100
150
200
Duration of Water Permeability Testing (Hrs)
WITH REGULAR CELLULOSE FIBER
WITH LOADED FIBERS

FIG. 4B

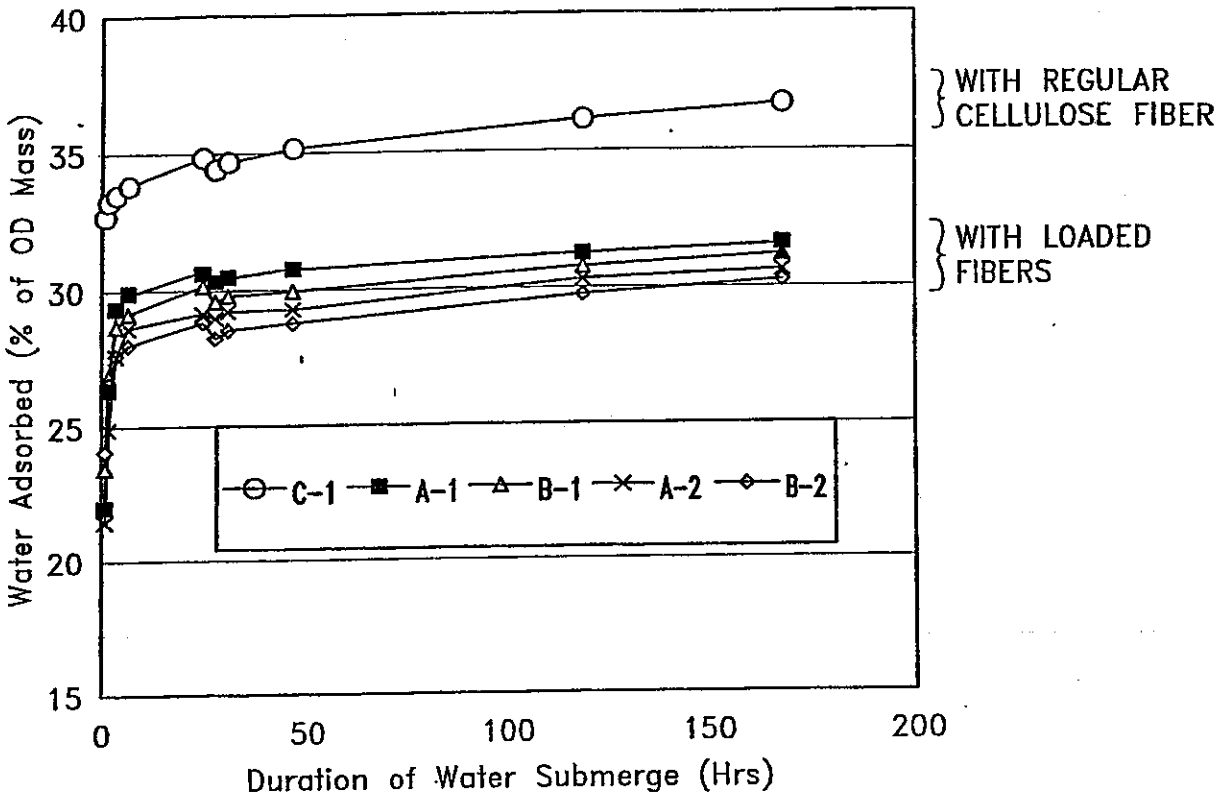
40
35
30
25
20
15
0
50
100
150
200
Water Adsorbed (% of OD Mass)
Duration of Water Submerge (Hrs)
C-1
A-1
B-1
A-2
B-2
WITH REGULAR CELLULOSE FIBER
WITH LOADED FIBERS

FIG. 5A

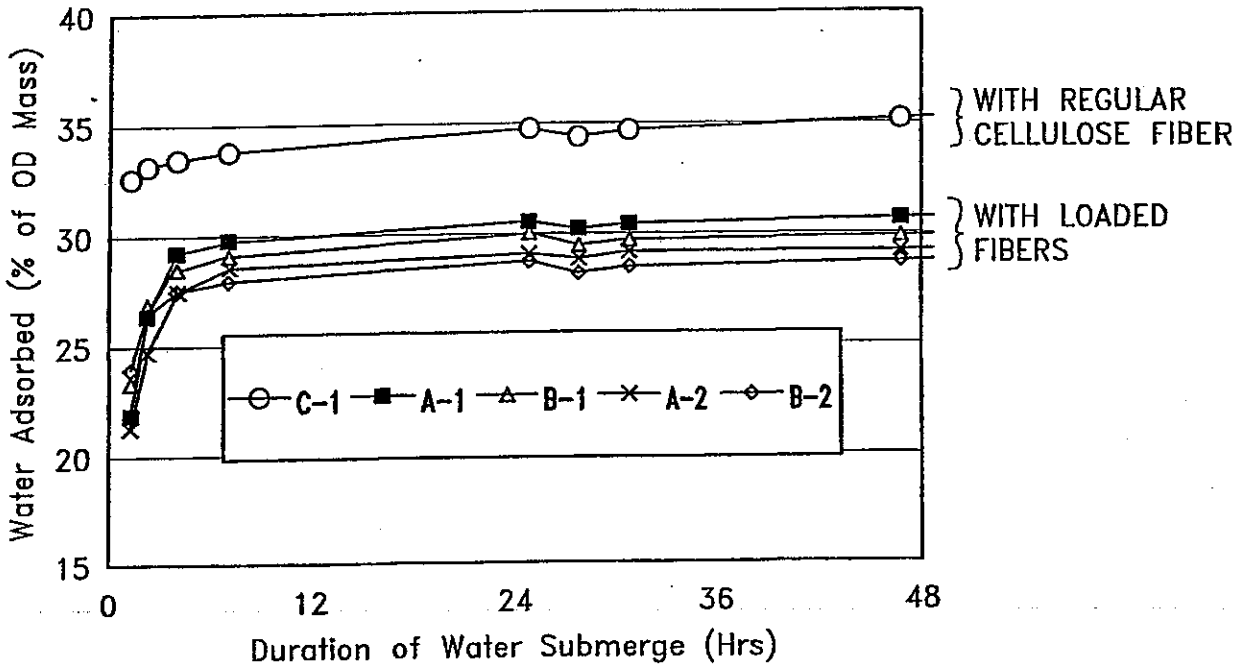
40
35
30
25
20
15
Water Adsorbed (% of OD Mass)
0
12
24
36
48
Duration of Water Submerge (Hrs)
C-1
A-1
B-1
A-2
B-2
WITH REGULAR CELLULOSE FIBER
WITH LOADED FIBERS

FIG. 5B