PLAINTIFF'S EXHIBIT
UC-4827

ASBESTOS

076673

INFORMATION BULLETIN

UNION CARBIDE HIGH-PURITY ASBESTOS

A NEW FIBROUS FILLER AND RETENTION AID

FOR PAPERBOARD

PROVIDES

IN TOP LINER—

- Opacity
- Pigment Retention
- Improved Formation
- Reduced Underliner Show-Through
- Cost Savings

PLUS

- Improved Printability
- Surface Flexibility and Toughness
- For Improved Folding

SEE ATTACHED MILL TRIAL DATA

Deponent DEPO. EXH. 12
3/10/89
KIRBY A. KENNEDY
COURT REPORTER

DEPO. EXH. 11
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APPLICATION—BOARD MILL EVALUATION

TOP LINER OF 22 PT. FOLDING BOXBOARD

Purpose of Trial:

1. Improve Titanium Dioxide Retention
2. Reduce stream pollution
3. Improve surface coverage or reduce underliner show-through.

Type of Paper Machine: An 8-cylinder Board Machine with 120" of effective trim.
Production Rate: 165 tons per day Machine Speed: 270 ft./min.
Basis Weight: 85 lbs./1000 Ft.^{2} or 255 lbs./3000 Ft.^{2}

Top Liner Furnish: (All waste papers)	Top Liner Furnish with Asbestos:
50% Blank (unprinted Newsprint) News	no change
29% Hard White Envelope Clippings	no change
21% Bleached Sulfate Cuttings	no change

Chemical and Color Additives:	Chemical and Color Additives:
1% TiO_2 (25¢/lb.)	1% TiO_2*
1% Mer-Size	no change
1% Natural Gum	no change
0.5% Sodium Aluminate	no change
pH 5.8 with Alum.	no change
6% Luster Clay (3¢/lb.) (reduced 3% with 3% asbestos added)	3% Asbestos added
3 oz. Paper Blue R.	no change

* Not needed with asbestos; see comments below.

Material Savings and quality gains associated with the use of asbestos:

I. Improved Brightness:

% Asbestos	0	2	3
Top Liner Brightness	65	66	67
Basis Weight (Lbs./1000 Ft.^{2})	85.5	85.1	85.4

II. Surface coverage improvement and reduced underliner show through was apparent to the Technical Superintendent and stated to be a very important quality gain.

III. The customer stated that shade was much better with the asbestos; getting away from their characteristic "tattle-tale" grey appearance.

IV. The brightness levels obtained with improved retention due to asbestos would, without question according to the Technical Superintendent, allow the elimination of the 1% TiO_2. The top liner represents 2500 lbs. per hour or 25 lbs./hr. of TiO_2. At 25¢/lb., 600 lbs. of TiO_2 per day would yield $150/day savings. Since 3¢/lb. luster clay was replaced pound for pound with asbestos, the actual cost of the asbestos use would be about 2¢/lb. or $36/day leaving this Paper Mill a daily savings of $114 or with the 22 pt. Folding Box Board being produced on this one machine 100 days per year *annual savings would be $11,400 per year.*

V. Top liner vat overflow to the sewer was reduced to coincide with the use of 3% asbestos yielding an estimated savings of $310 per day of *$31,000 annually.*

VI. These savings are significant. They are enhanced by improvement in the bending characteristics of heavier board brought about by the flexibility effects of asbestos.

APPLICATION

IMPROVING BOARD TOP LINER

TYPE BOARD: 33 pt. — 120 lb./1000 Ft.² WHITE VAT LINED CHIP

Purpose of Application:

1. Improve top liner appearance and reduce show-through
2. Improve top liner brightness
3. Improve smoothness
4. Improve printing characteristics

Type of Paper Machine: 5 cylinder machine producing 40 tons per day. These results would apply to many high tonnage machines producing the same grade of board.

Asbestos Used: High Purity at the 1% addition level

Furnish for Top Liner:		
	Tabulating Stock	42%
	Kraft	52%
	Clay	5%
	Size (Rosin)	0.3%
	Alum	0.7%

System pH 4.5

RESULTS OBTAINED FROM THIS APPLICATION OF HIGH PURITY ASBESTOS

I. *SHOW-THROUGH REDUCTION OR TOP LINER FORMATION IMPROVEMENT* was visually apparent. Using the top liner brightness divided by the bottom liner brightness as an indication of reduced show-through indicated a 20% improvement.

II. Brightness of the top liner was improved 4 points (62.5 increased to 66.5 with the asbestos present).

III. Smoothness (Sheffield) of the top liner was improved 16%.

IV. The board samples containing the asbestos gave improved Vanceometer readings indicating better printability. Better printability should also be expected with the improved brightness, smoothness, reduced show-through and improved uniformity.

This manufacturer continues to use High Purity Asbestos as a result of this work. Substantial quality gain permits the producer to reduce the weight of top liner with accompanying savings.

HIGH-PURITY, GRIT-FREE ASBESTOS AVAILABLE FROM UNION CARBIDE

RESOURCES AND CAPABILITY: Union Carbide owns and mines an extensive deposit of short-fiber (chrysotile) asbestos in the New Idria district of California. Ore mined from this region is processed in Union Carbide's up-to-date mill in King City, California.

NEW PROCESS ASSURES A HIGH-PURITY PRODUCT: Union Carbide's mill incorporates a unique process which results in a short-fiber asbestos product which is purer than any other commercially available. During the processing cycle, each individual chrysotile fibril is fully liberated from the surrounding fibrils and entrapped impurities.

Union Carbide's asbestos is:

- Lower in grit, magnetite, and unrefined fiber bundles.
- Higher in brightness and surface area—uniform in quality.

UNION CARBIDE'S ASBESTOS AVAILABLE IN TWO MAJOR GRADES: Union Carbide's range of HIGH-PURITY grades of asbestos is designed to meet the needs of a number of new uses for chrysotile asbestos. A range of STANDARD grades of asbestos is competitive with the conventionally produced Grade 7 asbestos.

USE:

HIGH-PURITY GRADES

Cellulosic paper: contributes to retention, pitch control, softness, opacity, and printability

Specialty papers

Ceiling tiles

Fresh water treatment: acts as a clarifying agent and decolorizer

Waste water treatment: acts as a flocculant, BOD removal agent and enhances oxidation

Plastic Products: can be used as a reinforcing material and as a filler for non-opaque plastics

STANDARD GRADES

Vinyl-asbestos floor tiles

Asbestos-cement products

Asphalt floor tile

Asphalt road paving

Filled plastics

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