



JAR  
INTERNAL CORRESPONDENCE

# CHEMICALS AND PLASTICS

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To (Name) Mr. B. K. Barton  
Company 565 Riford Road  
Location Neenah, Wisc. 54956

Date November 21, 1969

Originating Dept. Research and Development Department

Answering letter date

Copy to See Attached Distribution

Subject American Can Company  
Green Bay, Wisconsin

The attached report summarizes the machine trial held at the American Can Company mill in Green Bay, Wisconsin on November 6, 1969 for the purpose of evaluating High Purity Asbestos as a softening agent in paper. Except for the contained analytical test data, the report is mainly of academic interest, as the success of the trial depends entirely on the results of the subjective handfeel test program which their marketing group will perform. If they decide that the benefits produced by our material are a salable asset, it will probably be necessary to run a second trial so that adequate towel samples can be obtained for field testing.

*G. L. Dickson*

G. L. Dickson

GLD/bsn  
Attach.

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A17270

TECHNICAL SERVICE REPORT

THE EVALUATION OF HIGH PURITY ASBESTOS AS A  
SOFTENING AGENT IN PAPER TOWELING

for

American Can Company  
Green Bay, Wisconsin  
November 6, 1969

by

G. L. Dickson

Group Manager - W. L. Carrick

Project No. 452-M33

November 17, 1969

UNION CARBIDE CORPORATION  
Chemicals & Plastics  
Research and Development Department  
Niagara Falls, New York 14302

A17271

## SUBJECT

This report summarizes the High Purity Asbestos trial performed by American Can Company at their Green Bay, Wisconsin mill on November 6, 1969. The primary objective of this work was to acquire sufficient samples of toweling containing two levels of asbestos which would eventually be evaluated by American Can's marketing department. It is their intent to develop a product with improved handfeel softness properties, but which possesses strength characteristics similar to their present production. Also of consideration at this time was the effect of asbestos addition on both their production and converting operations.

## TRIAL RESULTS

Samples of converted toweling of adequate size containing two levels of asbestos addition were obtained from this trial. It has been reported that portions of these have been forwarded to American Can's marketing group for their review, which should be carried out in the near future. No operational problems were encountered during either the manufacture of these trial samples or their subsequent conversion into household towel rolls. Although no formal evaluation was made at the time on the effect of asbestos addition on handfeel softness, it is felt that a significant increase resulted. As is usual, this was accompanied by a loss in strength which was minimized by the presence of IAD (carboxymethyl cellulose) and Kymene 557 in the furnish.

## TRIAL DISCUSSION

This evaluation was carried out in four parts, only the last two directly involving the addition of asbestos to the papermaking furnish. The following is a brief summary of the four trial periods.

### Part A

Production was carried out under normal conditions but with 0.39% Kymene 557 being added to the furnish. (For strength improvement).

### Part B

During this period, 2.02 lb. IAD (carboxymethyl cellulose)/ton of paper and 0.21% Kymene were added to the furnish. This reportedly was similar costwise to the total amount of Kymene added in Part A. However, based on the small amount of test data available (refer Table I),

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it appears that better physical test results were obtained under the latter conditions.

#### Part C

Approximately 2% High Purity Asbestos was introduced into the system at the machine stuff box (in slurry form), utilizing an asbestos pellet repulper (R-1). Because of the brief trial period involved, it must be assumed that equilibrium conditions were probably not attained. However, because of the proximity of the asbestos point of addition to the headbox, the major effects of the asbestos were realized in a relatively short time.

#### Part D

The final trial period was the same as Part C except the addition of asbestos was increased to about 4% based on their machine production.

Additional data concerning various aspects of the trial are contained in the attached Mill Trial Data Sheet. Table I contains a summary of the physical test results obtained by their paper inspectors during the four trial phases. Table II contains analytical data obtained by our Niagara Falls laboratory on reel specimens and samples of converted towels (after embossing, printing, and rewinding).

#### CONCLUSIONS

No problems were encountered during the trial and sufficient converted towels were obtained for evaluation by their people. Initial results indicate that softness was benefited with a moderate loss in sheet strength. The lower tensile strength did not effect converting in any respect. Because of the short trial periods and the presence of talc in the pulp (contains magnesium which interferes with analyzing for asbestos), it was not possible to calculate asbestos retention. This is an important parameter however, and some effort should be made to determine this value at a later date.

G. L. Dickson/bsn

TABLE I

SUMMARY OF PAPER INSPECTION REPORT

| <u>Trial<br/>Period</u> | <u>No.<br/>of<br/>Tests</u> | <u>Basis<br/>Weight</u> | <u>Bulk</u> | <u>Tensile<br/>WM</u> | <u>Stretch<br/>WM</u> | <u>Aged WM<br/>Wet Tensile</u> | <u>Absorbency</u> |
|-------------------------|-----------------------------|-------------------------|-------------|-----------------------|-----------------------|--------------------------------|-------------------|
| Specs.                  | Aim                         | 14.6                    | .040        | 750                   | 250                   | 220                            | 10                |
|                         | Min                         | 13.9                    | .038        | 450                   | 150                   | 150                            | 50                |
|                         | Max                         | 15.3                    | .042        |                       |                       |                                |                   |
| Part A                  | 6                           | 14.6                    | .039        | 725                   | 250                   | 240                            | 6-1/2             |
| Part B                  | 2                           | 14.5                    | .037        | 790                   | 280                   | 210                            | 7                 |
| Part C                  | 4                           | 14.3                    | .041        | 680                   | 200                   | 165                            | 5                 |
| Part D                  | 2                           | 13.8                    | .038        | 480                   | 150                   | 150                            | 7                 |

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TABLE II

SAMPLE ANALYSES

| <u>Time Sampled</u> | <u>% Ash</u> | <u>% Mg</u>              | <u>% Mg due to<br/>Asbestos</u> | <u>Asbestos Content</u> |
|---------------------|--------------|--------------------------|---------------------------------|-------------------------|
|                     |              | <u>Reel Samples</u>      |                                 |                         |
| 6:10 AM (Part A)    | 0.32         | 0.10                     | 0                               | 0                       |
| 10:40 AM (Part B)   | 0.25         | 0.07                     | 0                               | 0                       |
| 11:20 AM (Part C)   | 1.17         | 0.32                     | 0.235                           | 0.94%                   |
| 12:20 PM (Part D)   | 2.86         | 0.73                     | 0.645                           | 2.58%                   |
|                     |              | <u>Converted Samples</u> |                                 |                         |
| Part A              | 0.63         | 0.11                     | 0                               | 0                       |
| Part B              | 0.58         | 0.10                     | 0                               | 0                       |
| Part C              | 1.86         | 0.48                     | 0.375                           | 1.50%                   |
| Part D              | 2.63         | 0.68                     | 0.575                           | 2.30%                   |

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**UNION CARBIDE CORPORATION**  
**MINING & METALS DIVISION**  
**MILL TRIAL DATA SHEET**

November 6, 1969

- I. COMPANY LOCATION AND DATE OF TRIAL American Can Co., Green Bay, Wisc.
- II. COMPANY REPRESENTATIVES AND TITLES Bruce Robertson, Earl Sandstrum,  
Marvin Fobes
- III. UCC REPRESENTATIVES B. K. Barton and G. L. Dickson
- IV. TRIAL OBJECTIVES (In order of importance) To prepare samples of toweling contain-  
ing two levels of High Purity Asbestos
- V. PRODUCT IDENTIFICATION
- Type of Product White Dry Creped Toweling Coated XX/No
- Grade Name 670
- Basis Weight 14.6 lb. (24 x 36-500)
- Daily Production 100-110 tons lb./hour 8,800
- Total Daily Production of Mill -
- (Tissue and Board) No. of Plys -
- VI. MACHINE DESCRIPTION
- Type of Machine Fourdrinier (Yankee)
- Machine No. 9 (Cylinder) No. of Cylinders -
- Machine Speed 2540 FPM (Tissue) Reel Speed 1960 FPM
- (Tissue) % Crepe 23.2 Wire Mesh -
- Wire Width - Machine Trim 184 inches
- Size Press No Calenders No

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VII. AUXILIARY EQUIPMENT

| Refiners | Type | Location | Loading (amp.) |
|----------|------|----------|----------------|
|          |      |          |                |
|          |      |          |                |
|          |      |          |                |

Saveall (Type) \_\_\_\_\_ Flow Rate \_\_\_\_\_

VIII. STOCK PREPARATION - Continuous or Batch

Type Beater and Capacity \_\_\_\_\_

No. of Beater Chests and Capacity \_\_\_\_\_

Machine Chest Capacity \_\_\_\_\_

Stock Freeness (Mach. Chest and Stuff Box) \_\_\_\_\_

Headbox Consistency 0.182 - 0.199%

Makeup pH \_\_\_\_\_ Machine pH \_\_\_\_\_

IX. FURNISH MAKEUP\* Basis (lb./ton, etc.) (Refer to trial log for addition levels.)

| Furnish Constituent                  | % | Pounds |
|--------------------------------------|---|--------|
| <u>Kymene 557</u>                    |   |        |
| <u>IAD (Carboxymethyl cellulose)</u> |   |        |
| <u>High Purity Asbestos</u>          |   |        |
|                                      |   |        |
|                                      |   |        |
|                                      |   |        |
|                                      |   |        |
|                                      |   |        |
|                                      |   |        |
|                                      |   |        |
|                                      |   |        |

\* For board systems include furnish for each medium - topline, underliner, filler, and backliner.

X. ASBESTOS ADDITION - Pellet Repulper (Type) R-1

Asbestos Grade High Purity Pellets Lot No. -

Point of Addition Stuff box (immediately prior to fan pump)

Pounds of Asbestos Added \_\_\_\_\_ per ton BDF \_\_\_\_\_ per beater

\_\_\_\_\_ per hour

Per cent asbestos addition on BDF 2% and 4%

XI. SUPPLEMENTARY INFORMATION

Quality Control Data Record

Stock Prep. Log

Sampling (in order of importance)

Pitch & Retention Trials

Beard Trials

Tissue and Towel

Reel

Tray Water

Stuff box

Stuff box

Vat

Reel

Headbox

Stuff box

Headbox

Tray

Reel

Saveall effluent

Saveall effluent

Saveall influent

Saveall influent

Identify samples by name, date, time

Wet samples should approximate 500 ml.

Weight of BD filter pad is required for all vat, tray, and saveall samples.

XII. TRIAL LOG (Comments including changes in furnish and operating conditions)

| <u>Time</u>   | <u>Comments</u>                                                                               |
|---------------|-----------------------------------------------------------------------------------------------|
| <u>Part A</u> | 0.39% Kymene 557 added                                                                        |
| <u>Part B</u> | 0.21% Kymene 557 added.<br>2.02 pounds IAD/ton                                                |
| <u>Part C</u> | 0.21% Kymene 557 added<br>2.02 pounds IAD/ton<br>200 pounds/hour High Purity Asbestos (2.25%) |
| <u>Part D</u> | 0.28% Kymene 557 added.<br>2.02 pounds IAD/ton<br>353 pounds/hour High Purity Asbestos (4%)   |

Recorded by

*Charles L. Jackson*

Date

*Nov 18, 1969*

Witnessed and Understood by

Date

A17279

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JAR  
~~HAAGM~~  
JAR FILE

Mr. J. S. McReynolds (4)  
960 Tifton Drive  
Baton Rouge, La. 70815

October 23, 1968

See Attached Distribution

International Paper Company  
Moss Point, Mississippi  
Asbestos T-135 Mill Trial

The attached report contains the data obtained from the paper machine evaluation of Asbestos T-135 at subject mill on October 8. The main purpose of the trial was to determine the compatability of T-135 in their system and to evaluate it as a replacement for Paper-Ad. As it appeared successful from both aspects, they are now planning on running a second trial which will be of longer duration. It would be desirable if we could receive wet-end samples from this next trial, as we were unable to do so during the present one.

  
G. L. Dickson

GLD/bsn  
Attach.

A 17281

TECHNICAL SERVICE REPORT

THE EVALUATION OF ASBESTOS T-135 AS A  
REPLACEMENT FOR TITANIUM DIOXIDE EXTENDERS

for

International Paper Company  
Moss Point, Mississippi  
October 8, 1968

by

G. L. Dickson

Group Manager - W. L. Carrick

Project No. 443-N11

October 22, 1968

UNION CARBIDE CORPORATION  
Chemicals & Plastics  
Research and Development Department  
Niagara Falls, New York 14302

A 17282

## SUBJECT

This report covers the paper machine evaluation of Asbestos T-135 at International Paper Company, Moss Point, Mississippi on October 8, 1968. The objective of this trial was to determine the compatability of asbestos in a typical coating grade paper furnish, and to evaluate it as a replacement for a titanium dioxide extender (Paper-Ad).

## TRIAL RESULTS

The results of this trial indicate that Asbestos T-135 can be used as a complete replacement for titanium dioxide extenders in coating-base paper furnishes. No problems were encountered during the trial concerning machine operations, and the substitution of Asbestos T-135 for Paper-Ad resulted in production with better brightness and equivalent opacity properties. Because of the short trial period involved, it was not feasible to monitor their wet-end system at this time. Thus, any increase in filler retention resulting from the addition of asbestos to the furnish was not ascertained. This aspect will, undoubtedly, be considered during a second machine trial which is now being scheduled by their people.

## DISCUSSION

Asbestos T-135 was introduced into this mill's No. 3 machine system during the production of a white coating base paper. The original intention was to add Asbestos T-135 with their clay slurry in the same ratio as their normal Paper-Ad and clay combination. This proved to be too viscous; therefore, the slurry was modified to overcome this problem. Their normal slurry combination and that used during the trial are as follows:

### Normal Clay/Paper-Ad Combination

200 lb. Paper-Ad  
600 lb. Clay  
Made up with water to 533 gallons

### Clay/Asbestos T-135 Combination

120 lb. Asbestos T-135  
680 lb. Clay  
Made up with water to 533 gallons

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During this trial there was no titanium dioxide added to the furnish except that which was present in their broke. The addition level of Paper-Ad/clay combination approximated 12.8 GPM during the pre-trial period, while the T-135/clay slurry was added at a rate of 12.6 GPM. Although the cost of the latter is somewhat higher than their normal mixture, it is felt that the addition level of the T-135/clay was not optimized at this time.

#### CONCLUSIONS

The main trial objective, to determine the compatability of Asbestos T-135 in a coating-base stock furnish, was realized. Except for a minor problem involving high viscosity of the clay/Asbestos T-135 slurry, the trial ran smoothly. Production specifications were maintained during the trial and a moderate increase in brightness resulted. Because of the short trial period, no attempt was made at this time to optimize on the addition level of Asbestos T-135, or to determine its effect on filler retention. As both of these are important factors, they will undoubtedly be considered during a more lengthy trial which is now being scheduled.

G. L. Dickson/bsn

TABLE I  
Analyses of Reel Samples  
October 8, 1968

| <u>Reel Time</u> | <u>%<br/>Ash</u> | <u>%<br/>TiO<sub>2</sub></u> | <u>%<br/>T-135</u> | <u>Opacity</u> | <u>Brightness</u> |
|------------------|------------------|------------------------------|--------------------|----------------|-------------------|
| 7:45 a.m.        | 5.01             | 0.09                         | 0                  | 88.6           | 78.0              |
| 9:00 "           | 4.63             | 0.11                         | 0                  | 87.0           | 77.0              |
| Average          | 4.82             | 0.10                         | 0                  | 87.8           | 77.5              |
| 10:15 a.m.       | 4.90             | 0.08                         | 0.55               | 87.2           | 78.6              |
| 12:15 p.m.       | 4.67             | 0.05                         | 0.86               | 87.6           | 79.2              |
| 12:45 "          | 4.77             | 0.09                         | 0.80               | 87.4           | 79.2              |
| 1:25 "           | 4.46             | 0.08                         | 0.86               | 88.0           | 79.2              |
| Average          | 4.70             | 0.08                         | 0.77               | 87.6           | 79.0              |

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**UNION CARBIDE CORPORATION**  
**MINING & METALS DIVISION**  
**MILL TRIAL DATA SHEET**

- October 8, 1968
- I. COMPANY LOCATION AND DATE OF TRIAL International Paper Co., Moss Point, Miss.
- II. COMPANY REPRESENTATIVES AND TITLES Lewis Walker: Assistant to P.M.  
Superintendent, Lowell Barfield: Assistant to P.M. Superintendent
- III. UCC REPRESENTATIVES John McReynolds, Gordon Dickson
- IV. TRIAL OBJECTIVES (In order of importance) To evaluate Asbestos T-135 as a  
replacement for titanium dioxide extenders
- V. PRODUCT IDENTIFICATION
- Type of Product Coating-base stock Coated Yes/No
- Grade Name White Label
- Basis Weight 61.5 lb. (24 x 36-500)
- Daily Production 110 tons lb./hour 15,375
- Total Daily Production of Mill \_\_\_\_\_
- (Tissue and Board) No. of Plys -
- VI. MACHINE DESCRIPTION
- Type of Machine Fourdrinier, with pressurized headbox
- Machine No. 3 (Cylinder) No. of Cylinders -
- Machine Speed 1000 FPM (Tissue) Reel Speed -
- (Tissue) % Crepe - Wire Mesh \_\_\_\_\_
- Wire Width \_\_\_\_\_ Machine Trim \_\_\_\_\_
- Size Press Vertical Calenders Double (0 & 2 nips)

VII. AUXILIARY EQUIPMENT

| Refiners | Type | Location | Loading (amp.) |
|----------|------|----------|----------------|
|          |      |          |                |
|          |      |          |                |
|          |      |          |                |

Saveall (Type)\_\_\_\_\_ Flow Rate\_\_\_\_\_

VIII. STOCK PREPARATION - Continuous or Batch

Type Beater and Capacity\_\_\_\_\_

No. of Beater Chests and Capacity\_\_\_\_\_

Machine Chest Capacity\_\_\_\_\_

Stock Freeness (Mach. Chest and Stuff Box)\_\_\_\_\_

Headbox Consistency\_\_\_\_\_

Makeup pH\_\_\_\_\_ Machine pH\_\_\_\_\_

IX. FURNISH MAKEUP\* Basis (lb./ton, etc.)\_\_\_\_\_

| Furnish Constituent            | %          | Pounds              |
|--------------------------------|------------|---------------------|
| <u>Bleached Pine Kraft</u>     | <u>35</u>  | _____               |
| <u>Bleached Hardwood Kraft</u> | <u>45</u>  | _____               |
| <u>Broke</u>                   | <u>20</u>  | _____               |
| _____                          | _____      | _____               |
| <u>Rosin Size</u>              | _____      | <u>10 lb./ton</u>   |
| <u>Alum</u>                    | _____      | <u>10 lb./ton</u>   |
| <u>Clay: Pre-Trial</u>         | <u>5.6</u> | <u>864 lb./hour</u> |
| <u>      Trial</u>             | <u>6.3</u> | <u>964 lb./hour</u> |
| <u>Paper-Ad: Pre-trial</u>     | <u>1.9</u> | <u>288 lb./hour</u> |
| <u>Asbestos T-135: Trial</u>   | <u>1.1</u> | <u>170 lb./hour</u> |

\* For board systems include furnish for each medium - topliner, underliner, filler, and backliner.

X. ASBESTOS ADDITION - Pellet Repulper (Type) None

Asbestos Grade T-135 opened Lot No. \_\_\_\_\_

Point of Addition Machine Chest

Pounds of Asbestos Added \_\_\_\_\_ per ton BDF \_\_\_\_\_ per beater  
 \_\_\_\_\_ per hour

Per cent asbestos addition on BDF \_\_\_\_\_

XI. SUPPLEMENTARY INFORMATION

Quality Control Data Record

Stock Prep. Log

Sampling (in order of importance)

**Pitch & Retention Trials**

**Beard Trials**

**Tissue and Towel**

#Reel

Tray Water

Stuff box

Stuff box

Vat

Reel

Headbox

Stuff box

Headbox

Tray

Reel

Saveall effluent

Saveall effluent

Saveall influent

Saveall influent

Identify samples by name, date, time

Wet samples should approximate 500 ml.

Weight of BD filter pad is required for all vat, tray, and saveall samples.

XII. TRIAL LOG (Comments including changes in furnish and operating conditions)

| <u>Time</u> | <u>Comments</u>                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pre-trial   | Normal clay and Paper-Ad slurry added to furnish at 12.8 gal./minute.<br><br><u>Slurry make-up</u><br>200 lb. Paper-Ad<br>600 lb. Clay<br>Diluted to 533 gallons (Total Volume) |
| Trial       | Clay and Asbestos T-135 slurry added to furnish at 12.6 GPM<br><br><u>Slurry Make-up</u><br>120 lb. Asbestos T-135<br>680 lb. Clay<br>Diluted to 533 gallons (Total Volume)     |

Recorded by Caroline H. Dickson Date October 8, 1968  
Witnessed and Understood by \_\_\_\_\_ Date \_\_\_\_\_

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