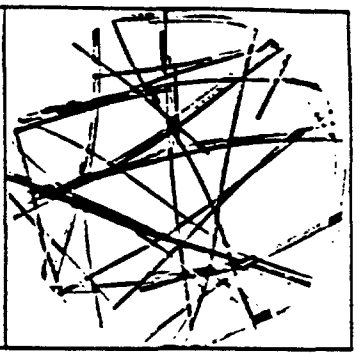
ASBESTOS

PLAINTIFF'S EXHIBIT
UC-9

INFORMATION



UNION CARBIDE HIGH-PURITY ASBESTOS

A UNIQUE FIBROUS SOFTENING AGENT AND RETENTION AID FOR TISSUE AND TOWELS

PROVIDES

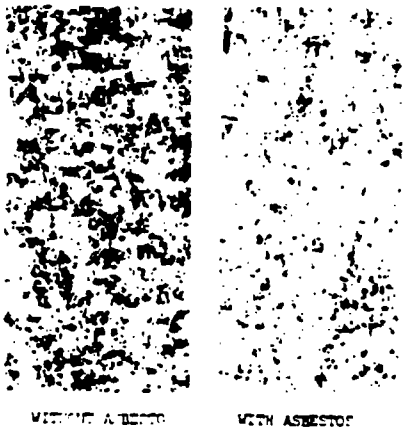
FEXIBILITY; DRAPE; VELVET SURFACE FEEL

CLARK SOFTNESS VALUES :

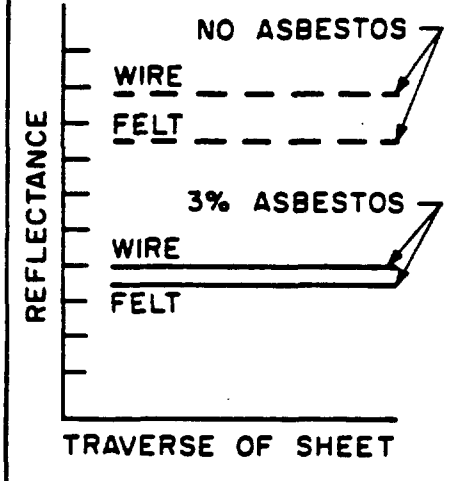
BLEACHED SULFITE UNFILLED ——— 9.5

SAME WITH 5% ASBESTOS — 14.1

IMPROVED SHEET FORMATION



INCREASE DYE RETENTION



PLUS

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IMPROVED RETENTION OF CELLULOSE FINES AND FILLERS

SEE ATTACHED GRAPHS AND MILL TRIAL DATA

APPLICATION SOFTNESS FOR FACIAL TISSUE

Purpose of Trial: Improve overall softness and reduce raw material costs.

Type of Paper Machine: Yankee — 120" Trim with 75/58 mesh wire
Machine Speed: 1000 ft./min. with 10% Crepe
Production Rate: 20 tons/day

Furnish (in use):	Furnish Possible Using 4% High Purity Asbestos:
10% Kraft Bleached Hardwood ($90 per ton)	29% Kraft Bleached Hardwood ($90 per ton)
66% Spruce Sulfite ($150 per ton)	43% Kraft Bleached Pine ($110 per ton)
24% Broke ($130 per ton)	24% Broke ($102 per ton)
	4% Asbestos ($150/ton)
Furnish Cost . . . $139 per ton paper	$110 per ton paper

Savings to paper company per year (300 days) $174,000

Economic Gain and Quality Improvement:

This trial indicated that this paper company can save $174,000 per year in their facial operation alone. High Purity Asbestos was evaluated at the 2%, 4%, and 6% level. A panel of people experienced in evaluating facial tissue handfeel judged the 4 and 6% asbestos content paper the best they had felt for handfeel. A side benefit was noted by the paper company people—that the asbestos contributed to more uniform formation.

Physical Characteristics of the Facial Tissue:

Percent Asbestos:	0%	2%	4%	4-6%
Basis Weight (Lbs./3000 ft.^{2})	11.53	10.96	10.66	10.94
Bulk or Caliper (Std. Test)	32	31	30.9	31.2
Machine Direction Tensile (oz./15 mm strip)	9.3	8.6	7.1	5.1
Cross Direction Tensile (oz./15 mm strip)	4.8	3.8	3.4	2.6
Tensile Ratio (M.D./C.D.)	2.0	2.2	2.1	2.0
Absorption (seconds/.01 ml)	5	5	5	5

RESULT OF THIS WORK WITH THIS PAPER COMPANY:

This company now uses asbestos in all products: tissue, towels, and facial tissue.

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SOFTNESS AND FORMATION

Another example of paper properties experienced with High Purity Asbestos additions is illustrated in Table 1. High Purity Asbestos was added to a 30 lb. wet creped towel and softness was found to improve over 20%. Additional benefits included improvements in wet tear, % stretch, and an obvious reduction of solids in the clarified water at the effluent of the saveall.

TABLE I

TRIAL DATA

		With Asbestos in Paper		
	No Asbestos	2%	3%	4%
Basis Weight (lbs./24"x36"x48")	30.0	30.1	29.8	30.4
Softness (Crush Test)	2200	1700	1680	1680
Bulk (4 ply cap.)	0.267	0.268	0.266	0.274
% Stretch	6.5	7.4	7.2	7.1
Wet Tensile Aged (one inch strip aged in oven at 108°C for 10 min.)				
Machine Direction	2.7	—	2.8	2.7
Cross Direction	1.7	—	1.5	1.6
Dry Tensile (one inch strip)				
Machine Direction	9.6	—	9.3	8.6
Cross Direction	5.7	—	5.5	5.5
Wet Tear				
Machine Direction	30	—	36	42
Cross Direction	34	—	42	52
Absorbency (1/10cc)				
Seconds	35	—	33	35

Formation improvements are often dramatic with High Purity Asbestos addition.

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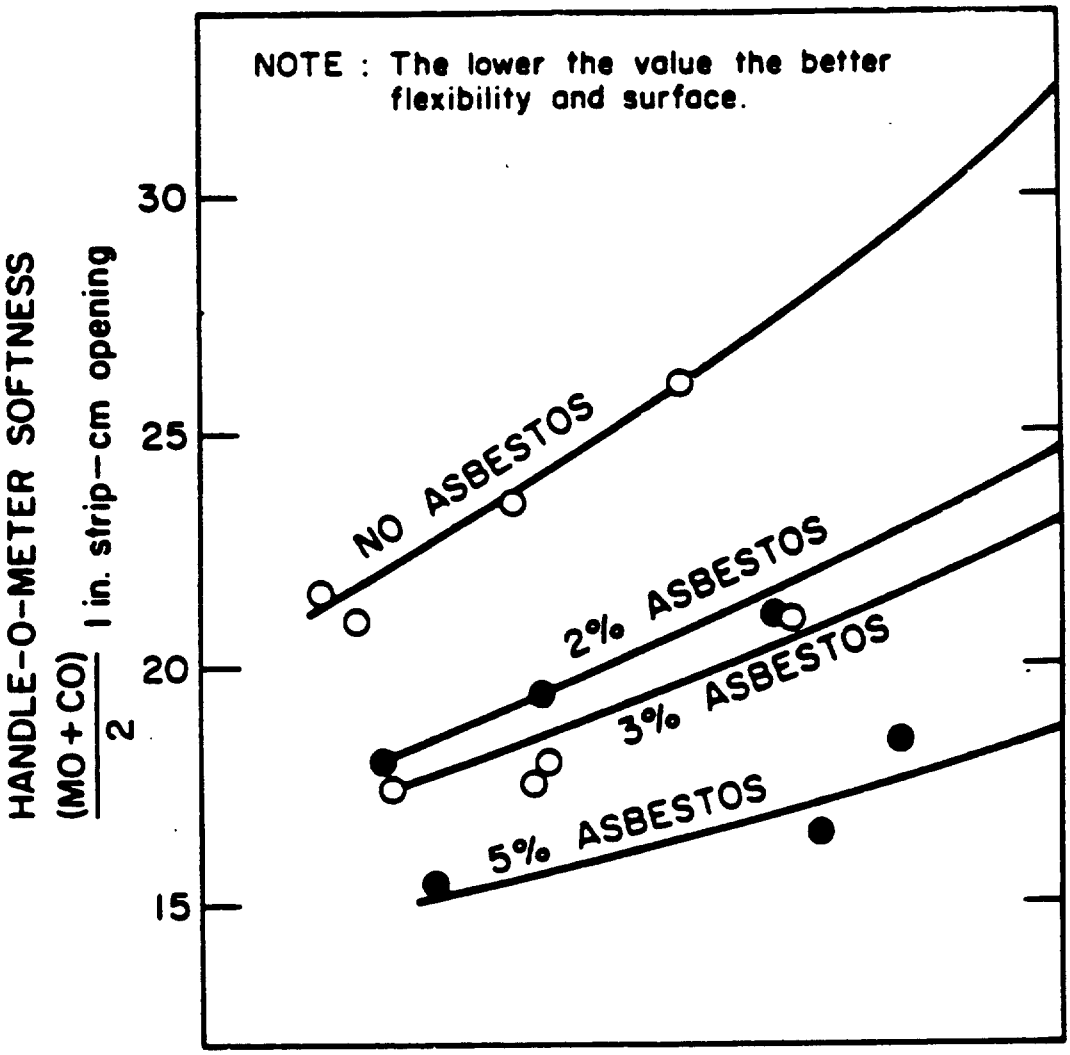

Asbestos softening of a 40-lb. towel.

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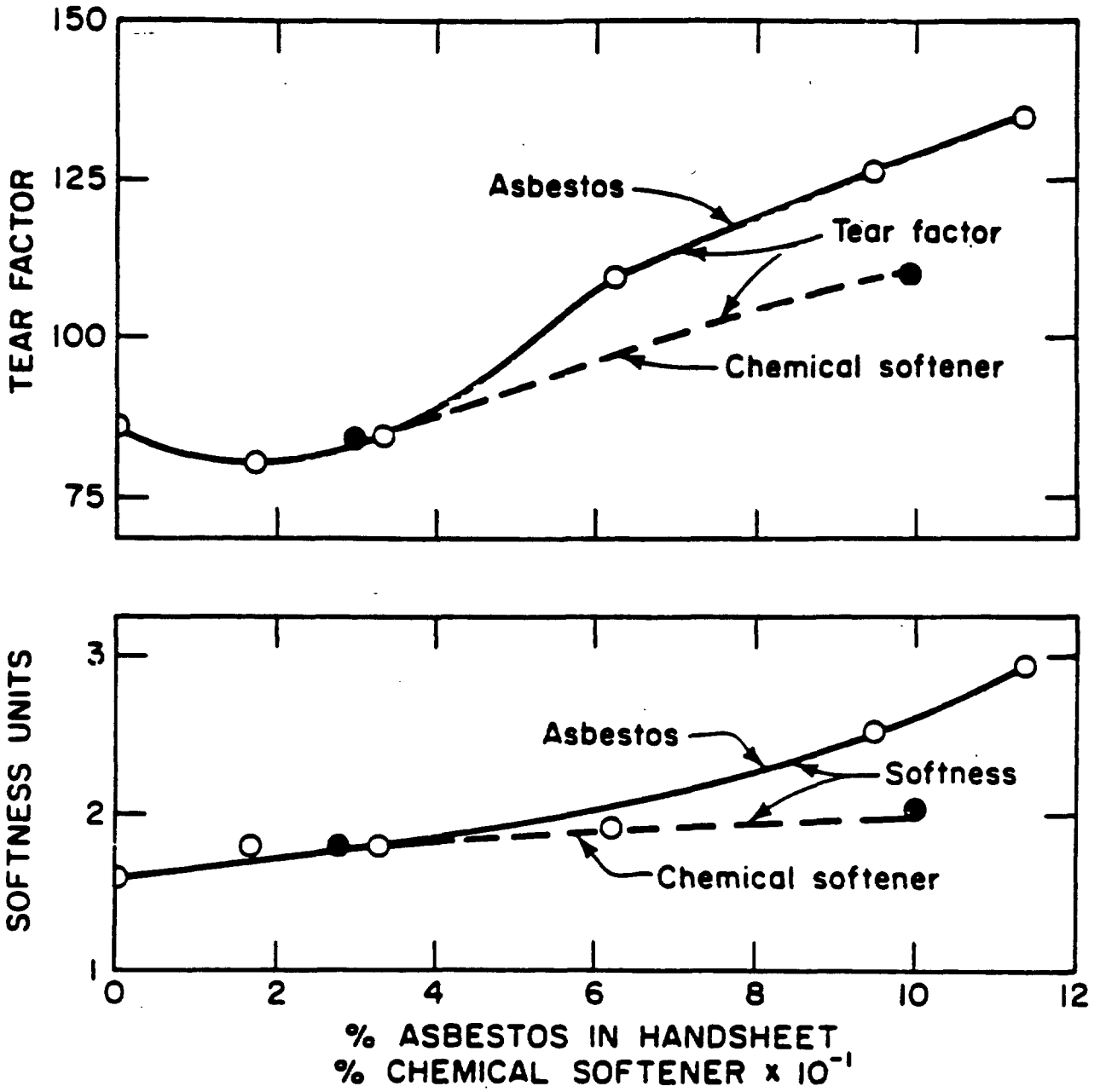

Effects of asbestos on paper softness and tear (kraft pulp, standard weight).

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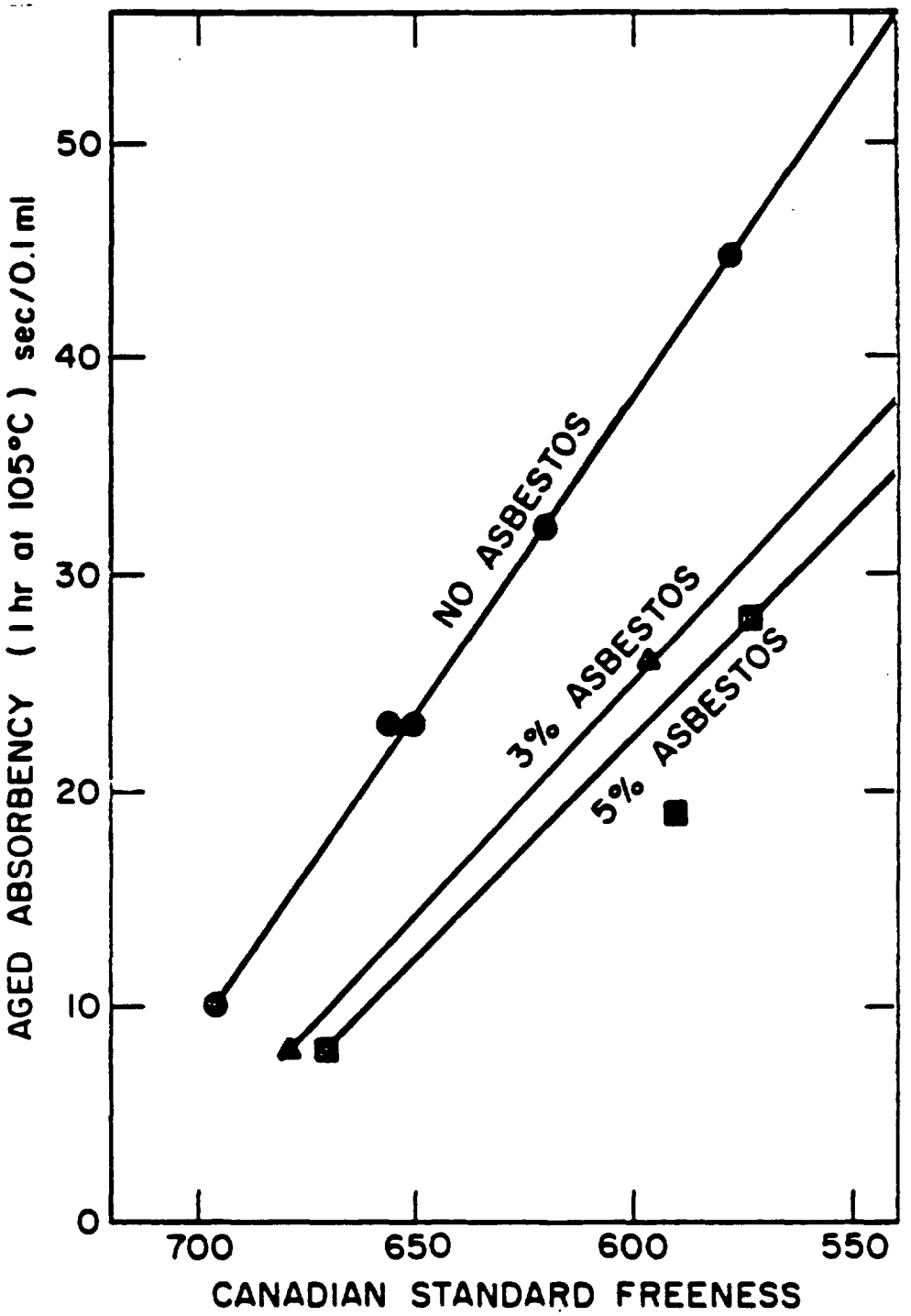

Asbestos improving aged towel absorbency.

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