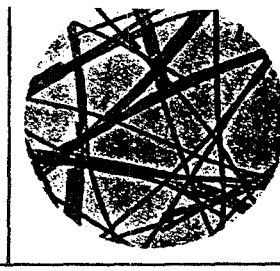
Plaintiff's Exhibit
S-UC-19

UNION CARBIDE ASBESTOS

PRODUCT INFORMATION



Photomicrograph of Union Carbide's High-purity asbestos fiber

UNION CARBIDE CORPORATION • MINING AND METALS DIVISION • 270 PARK AVENUE, NEW YORK, N.Y. 10017

A THREE-MINUTE STORY ON UNION CARBIDE ASBESTOS

High purity, non-abrasive, high brightness -- these unusual properties make Union Carbide asbestos different from all other asbestos products. The reason for the difference is that Union Carbide asbestos comes from an unusual high-grade ore deposit that is essentially free of hard, consolidated rock masses. A patented wet process then breaks down the fiber bundles and removes the rock and other foreign material, leaving a product that is essentially pure asbestos. When added to paper, this product offers many money-saving advantages, including improved furnished retention, saveall efficiency, optical efficiency, pitch control, and softness.

A positive surface charge is responsible for the improved retention obtained from Union Carbide asbestos in paper. Asbestos, with a Zeta potential of +40 millivolts, attracts TiO_2 and cellulose whose Zeta potential is -2 and -13 millivolts respectively. (These charges occur at a pH of 6.) This strong opposite charge reduces the loss of solids to the tray water.

Thousands of tiny fibrils are contained in every pellet of Union Carbide asbestos. Each fibril is only a few microns in length and has a length-to-diameter ratio of between 200 and 300 to one. These fibrils are so tiny that if all the fibrils in 1 gram of asbestos were put end to end, they would circle the earth at the equator 40 times. The large surface area provided by these fibrils helps the asbestos improve retention and pitch control.

An abrasion test has been made to measure the relative abrasiveness of Union Carbide asbestos and bleached sulfite paper stock. Wet-processed asbestos was found to be less abrasive than pulp, indicating minimum wear on fourdrinier wires, trimming knives, printing plates, etc.

Asbestos is a group of minerals. Union Carbide asbestos is a chrysotile asbestos, the most abundantly produced of 6 species of asbestos found in the world. Its formula, in case anyone is interested, is $Mg_6(OH)_8Si_4O_{10}$.

One of the world's largest asbestos deposits is the source of Union Carbide's high-purity asbestos product. Located near King City, Calif., about 150 miles south of San Francisco, this deposit has millions of tons of known reserves, assuring users of a continuing supply.

For more information about this unusual asbestos, write or phone one of these offices:

PLAINTIFF'S EXHIBIT
tabbies
WV-009188

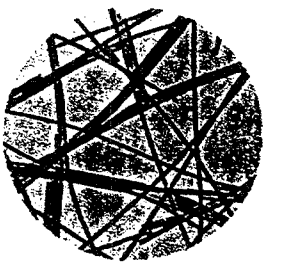
270 Park Ave., New York, N. Y.	212-LL1-4420
1371 Peachtree St. N. E., Atlanta, Ga.	404-876-3331
6855 W. 65th St., Chicago, Ill.	312-581-5000
22 Battery St., San Francisco, Calif.	415-982-1360

PLAINTIFF'S EXHIBIT
tabbies
43803.00

UNION CARBIDE ASBESTOS

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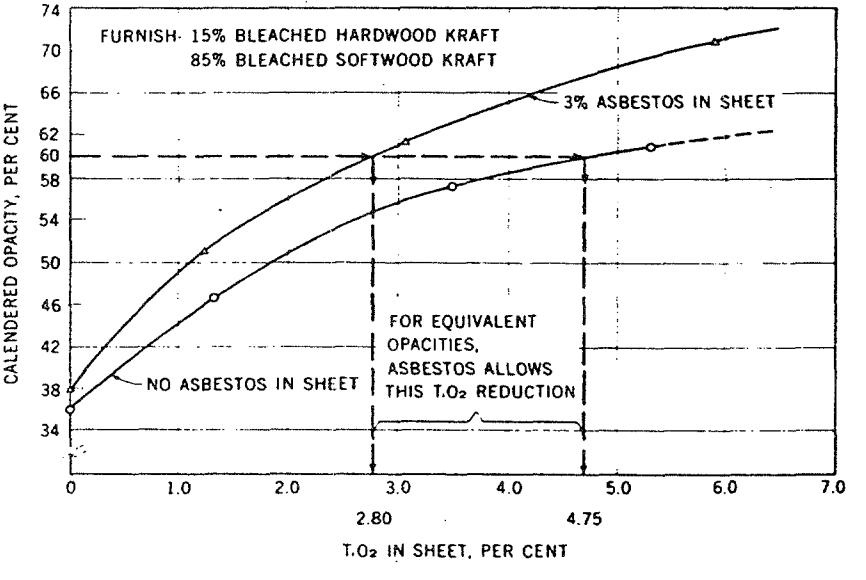
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UNIVERSITY OF MAINE FINDS THAT ASBESTOS IMPROVES OPTICAL EFFICIENCY OF TiO_2 IN GLASSINES; TiO_2 ADDITIONS AND COSTS REDUCED

Many mills have reduced TiO_2 additions to glassine and pouch papers by using asbestos in the furnish. The reason: asbestos improves the optical efficiency of TiO_2, so that less TiO_2 is needed in paper to obtain a given opacity level. This practice allows substantial reductions in furnish costs.

This effect was recently measured by the University of Maine. Using hand-sheet studies, the university's paper laboratory measured the calendered opacity of 30 gm/m2 glassine containing 0 and 3 per cent asbestos. The graph at the right shows the opacity obtained at different TiO_2 levels.

EFFECT OF ASBESTOS ON OPTICAL EFFICIENCY OF TiO_2
30 GM/M² GLASSINE



These results show that the presence of asbestos in the glassine sharply reduces the TiO_2 needed to obtain a given opacity. As an example, consider a glassine calling for an opacity of 60 per cent. Without asbestos, 4.75 per cent TiO_2 would be needed in the sheet. When the paper contains 3 per cent asbestos, however, only 2.8 per cent TiO_2 is needed.

This reduction of almost 2 per cent TiO_2 in the sheet can lead to substantial savings in pigment costs. The total TiO_2 cost of the sheet without asbestos would be about $23.75 per ton. In comparison, the cost of the TiO_2 and asbestos in the asbestos-bearing sheet would be about $18.40 per ton. Thus, a saving of at least $5.35 per ton is possible using asbestos in this practice, not counting the differences in retention between the two practices.

The curves above show that even greater TiO_2 savings are possible by using asbestos in glassines requiring more than 60 per cent opacity.