

FILE NAME: RT Vanderbilt (RTV)

DATE: 1974 Oct 23

DOC#: RTV090

DOCUMENT DESCRIPTION: Memo RE Asbestos Minerals in Talc Samples from RT Vanderbilt

John-Manning

INTERNAL CORRESPONDENCE

R. S. Langer - R&D

Date: October 23, 1974

V. E. Volkodoff - R&D

Distribution on Reverse Side

TEM AND SELECTED AREA DIFFRACTION PATTERNS OF ASBESTOS MINERALS IN FOUR
TALC SAMPLES PRODUCED BY R. T. VANDERBILT COMPANY

1. At your request, I was able to contract time on the Philips 200 electron microscope at Denver Research Institute to confirm by selected area diffraction patterns, the presence of chrysotile, anthophyllite and tremolite in all the R. T. Vanderbilt talcs designated Hyal 200, Nylal 400, Asbestine 3X, and Asbestine 325X (please refer to my letter of October 9, 1974, which is based basically on FEA optical methods and the use of our RCA electron microscopes to confirm chrysotile). It was felt that selected area diffraction patterns of the asbestos minerals using the Philips 200 would lend positive identification - a type of analysis which cannot be done on our RCA EMU-3B model.
2. Table No. 1 not only identifies samples, but also identifies all TEM prints and selected area diffraction patterns of the 33 prints attached to this letter. The TEM plates are always on file. The microscope constant ($L \lambda$) was derived by averaging 21 microscope constant values based on lines of Au and Pd. The microscope constant is:

$$L \lambda = 4.451 \text{ } \overset{\circ}{\text{A}} \text{ cm} \pm 0.003$$

To calculate d-spacing in Angstrom units, the following formula was used:

$$\frac{L \lambda \text{ (} \overset{\circ}{\text{A}} \text{ cm)}}{\text{spot pair radius (cm)}} = \text{d-spacing (} \overset{\circ}{\text{A}} \text{)}$$

3. Chrysotile, anthophyllite, and tremolite were all found in each of the four R. T. Vanderbilt talc samples. Particular data for each sample are found in Table No. 1 and appropriate attached electron diffraction patterns.

V. E. Volkodoff

V. E. Volkodoff

jc

Attachments



CRMC-BEV-000274

NOTERBOK 4454-0000-82-01

Distribution:

R. P. Carter* - 4N
E. E. Fenner - 4N
Paul Kotin, M.D. - 4N
W. B. Reitze - 4N
F. J. Solon, Jr. - 4N
G. L. Swallow - 4N
A. C. P. Finkbinder, III - 5W
J. A. McKinney - 5W
H. E. Keeffe* - 2W
D. A. Martinson - 2W
C. A. Sulcowski - 2W
W. L. VanDerbeek - 2S
R. G. Riede - 2S

F. L. Pundsack
J. P. Leineweber*
W. C. Streib
S. Speil*
R. S. Lamar*
V. E. Wolkodoff*

*Prints attached only to those names followed by asterisk.

TABLE 1

TEM Tabulation of Micrographs and Selected Area Diffraction
Patterns of Four Talc Samples From R. T. Vanderbilt Co.

No.	Vanderbilt Designation	TEM-Plate No., Magnification	Selected Area Diffraction Pattern, 35X	Remarks
1	RC 74255-1 Nytal 200	2301A, 11,000X	-	-
2	RC 74255-1 Nytal 200	2317A, 16,000X	-	-
3	RC 74255-1 Nytal 200	2305A, 22,000X	-	Chrysotile fiber
4	RC 74255-1 Nytal 200	-	2305B	Pattern is of widest fiber in 2305A, Chrysotile
5	RC 74255-1 Nytal 200	2306A, 22,000X	-	Anthophyllite fiber
6	RC 74255-1 Nytal 200	-	2306B	Anthophyllite fiber in 2306A
7	RC 74255-1 Nytal 2-0	2307A, 22,000X	-	Tremolite fiber
8	RC 74255-1 Nytal 200	-	2307B	Tremolite fiber in 2307A
9	RC 74255-2 Nytal 400	2302D, 11,000X	-	-
10	RC 74255-2 Nytal 400	2318C, 16,000X	-	-
11	RC 74255-2 Nytal 400	2308A, 22,000X	-	Chrysotile fiber
12	RC 74255-2 Nytal 400	-	2308B	Pattern of Chrysotile above
13	RC 74255-2 Nytal 400	2309A, 22,000X	-	Anthophyllite fiber
14	RC 74255-2 Nytal 400	-	2309B	Pattern of Anthophyllite above
15	RC 74255-2 Nytal 400	2310A, 22,000X	-	Tremolite fiber
16	RC 74255-2 Nytal 400	-	2310B	Pattern of Tremolite above
17	RC 74255-3 Asbestine 3X	2303D, 11,000X	-	-
18	RC 74255-3 Asbestine 3X	2319D, 16,000X	-	-
19	RC 74255-3 Asbestine 3X	2311A, 22,000X	-	Chrysotile fiber on bottom
20	RC 74255-3 Asbestine 3X	-	2311B	Pattern of Chrysotile above
21	RC 74255-3 Asbestine 3X	2312A, 22,000X	-	Anthophyllite fiber
22	RC 74255-3 Asbestine 3X	-	2312B	Pattern of Anthophyllite above
23	RC 74255-3 Asbestine 3X	2313A, 22,000X	-	Tremolite fiber
24	RC 74255-3 Asbestine 3X	-	2313B	Pattern of Tremolite above
25	RC 74255-4 Asbestine 325	2304A, 11,000X	-	-
26	RC 74255-4 Asbestine 325	2322A, 16,000X	-	Fiber is composed Chryso- tile and Amphibole

(2)

Table 1 continued

Ex.	Loc. No.	Vanderbilt Designation	TEM Plate No., Magnification	Selected Area Diffraction Pattern, 35X	Remarks
27	RC 76255-4	Asbestine 325	-	2322B	Chrysotile pattern superimposed on Amphibole pattern
28	RC 76255-4	Asbestine 325	2314A, 22,000X	-	Chrysotile fiber
29	RC 76255-4	Asbestine 325	-	2314B	Pattern of Chrysotile above
30	RC 76255-4	Asbestine 325	2315A, 22,000X	-	Longest fiber is Anthophyllite
31	RC 76255-4	Asbestine 325	-	2315B	Pattern of Anthophyllite above
32	RC 76255-4	Asbestine 325	2316A, 22,000X	-	Largest fiber is Tremolite
33	RC 76255-4	Asbestine 325	-	2316B	Pattern of Tremolite above