

DEPARTMENT OF MATERIALS CHEMISTRY
Non-metallic Minerals Section

PLAINTIFF'S
EXHIBIT

UC-254

ASBESTOS-CEMENT PROPERTIES OF
MILLED ATLAS ASBESTOS

Non-metallic Minerals Services
Report No. NMS 459-79-2

S. J. Thorndyke
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for

Atlas Asbestos Company
Box 805
Coalinga, Calif. 93210
U.S.A.

Attention: Mr. Irving F. Moore
President

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INTRODUCTION

A sample of Atlas asbestos mill fibre and four fibrized samples of the same material were received for rod milling and asbestos-cement strength test evaluation. The fibrized samples had been produced under different conditions of fibrizer plate-separation and number of passes. The samples were labelled FEED, #1, #2, #3 and #4.

EXPERIMENTAL

The fibrized samples were used for the ORF version of the asbestos-cement relative strength test using 12½% fibre concentration. The fibre which gave the highest strength (actually #2) was retested with a rod milling stage before the strength test using either a 15 min. wet milling or 7½ min. dry milling plus 7½ min. wet milling.

Rod milling was done in a 25 cm x 19 cm diameter mill with a 5 kg rod change, 20 g of fibre, and a speed of 64 rpm. For wet milling, a pulp density of 15% in saturated lime-gypsum water was used.

Rod milling and strength tests were also carried out on the feed sample using either a 15 min. dry milling, 15 min. wet milling or 7½ min. dry milling plus 7½ min. wet milling.

RESULTS AND DISCUSSION

The asbestos-cement properties are summarized in Table I.

None of the as-received fibrized samples gave high MR_A values but after wet milling the MR_A increased to 367 kg/cm². This is much better than the strength of a Quebec 6D fibre and is approaching the value for a 5R.

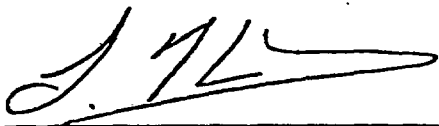
Tests with the milled feed indicated a maximum MR_A of 340 kg/cm².

Except for the as-received fibrized samples, the drainage rates were all very low, averaging about 2.2 ml/s.

CONCLUSIONS

The highest MR_A obtained in a limited number of tests with the latest series of Atlas fibres was 367 kg/cm^2 . This is similar to a Quebec grade 5R fibre and was obtained after fibrizing and then wet rod-milling for 15 min. The corresponding drainage rate was only 2.7 ml/s .

None of the samples which had been fibrized without further milling gave strength results equivalent to any of the milled fibres.



S. J. Thorndyke
Associate Research Scientist



D. J. Pinchin
Associate Research Scientist

pmt

TABLE I

ASBESTOS-CEMENT PROPERTIES OF ATLAS FIBRE

Sample	Grind	Asbestos-Cement Properties*				
		Drainage Rate (ml/s)	Water Retention (%)	Average Thickness (mm)	Average Load (lb)	Average Density (g/cm ³) Modulus Ruptur (kg/cm ²)
#1 Fibrized	As-received	6.26	20.1	5.89	111	1.59 191
#2 Fibrized	As-received	5.50	22.0	6.07	130	1.54 223
#3 Fibrized	As-received	6.22	22.0	6.06	120	1.56 201
#4 Fibrized	As-received	6.26	20.2	5.94	99	1.57 172
#2 Fibrized	15 min. wet	2.71	21.1	5.79	223	1.68 367
#2 Fibrized	7½ min. dry +7½ min. wet	1.69	20.6	5.69	199	1.68 330
Feed	15 min. dry	2.09	18.7	5.51	186	1.72 315
**Feed	7½ min. dry +7½ min. wet	1.82	20.7	5.70	205	1.68 340
Feed	15 min. wet	2.76	24.4	6.09	195	1.62 305

* Averaged for two plaques per sample

** Four plaques