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PLAINTIFF'S EXHIBIT UC-254

DEPARTMENT OF MATERIALS CHEMISTRY

Non-metallic Minerals Section

ASBESTOS-CEMENT PROPERTIES OF MILLED ATLAS ASBESTOS

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

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for

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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/cm^2. 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/cm^2.

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.

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Union Carbide trial exhibit UC-254: S. J. Thorndyke and D. J. Pinchin (Ontario Research Foundation) for Atlas Asbe...
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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
#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	1.66	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

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