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Haskell Laboratory for Toxicology and Industrial Medicine

HASKELL LABORATORY REPORT NO. 367-73 MR NO. 1677-001

Materials Tested	Haskell Nos.	Other Codes	Submitted by
1) "Kaycel" (Improved, light)	1) 7800	1) None	G. Limperos
2) Coverall Fabric	2) 7802	2) None	Textile Fibers Department
3) Tyvek® Style 1443-R	3) 8171	3) None	
4) Tyvek® Style 1443-T-766	4) 8172	4) None	
5) Asbestos Cement (Chrysotile)	5) 8175	5) None	

TEST FOR PERMEABILITY OF FABRIC TO ASBESTOS CEMENT

Procedure: In conjunction with a wear-test of Tyvek® coveralls by insulation workers, the permeability of test fabrics to high concentrations of asbestos cement dust was determined. High concentrations of asbestos cement dust (H-8175) were generated in an inhalation chamber. Samples were taken on cellulose acetate filters for 15 seconds at 0.5 liters per minute for analysis of fiber concentration in the chamber atmosphere. Fiber concentration (fibers/liter of air) was determined for total fibers, fibers greater than 5 μ in length and greater than 10 μ in length. Similar samples were taken for two minutes through each of the test materials and % permeability* was calculated.

One sample of the chamber concentration and one sample taken through each test material were counted at Haskell Laboratory. Additional samples were taken at the same time and enumerated at Mt. Sinai Hospital under the direction of Dr. William Nicholson. The fiber counts from the two laboratories will be compared later by the Textile Fibers Department.

Results

Haskell Number	Total Fibers	% Permeability* Fibers > 5 μ	Fibers > 10 μ
7800	12.9	4.9	3.2
7802	9.5	5.5	3.4
8171	2.4	2.0	1.7
8172	0.1	0	0

Summary: Four test fabrics were examined for permeability to Asbestos Cement Dust. The Tyvek® samples (H-8171 and H-8172) exhibited considerably less permeability than the "Kaycel" or coverall material. One sample, H-8172, allowed essentially no fibers to permeate. The "Kaycel" and coverall fabric allowed 13% and 10% penetration of total fibers, respectively, but the permeability decreased proportionally to increased fiber length. This was not true of Tyvek® Style 1443-R (H-8171) where permeability remained at about 2% regardless of fiber size.

It should be noted that these figures are the results of single samples and that some contamination of the filter from the test fabric was possible.

* Concentration through test material	X	100
Concentration in chamber		

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