FILE NAME: Westinghouse (WH)

DATE: 1971 Nov 1

DOC#: WH079

DOCUMENT DESCRIPTION: Letter to the Association of American Railroads from Johns-Manville with Wear Test Results of COBRA Brake Shoes

Johns-Manville

Research & Engineering Center

P. O. Box 159
Manville, N. J. 08835
(201) 722-9000

Copy to FJG.

PLAINTIFF'S EXHIBIT RR-126b

November 1, 1971
(written 10/29/71)

Mr. William J. Harris, Jr
Vice President, Association of American Railroads
Research & Test Department
American Railroads Building
1920 L Street, N.W.
Washington, DC 20036

Dear Mr. Harris:

In my letter to you of June 25, 1971, I had pointed out that wear tests would be performed on COSRA brake shoes to determine the extent to which chrysotile fiber is released during service. These tests have been conducted at the Westinghouse Air Brake Division under the supervision of JM Research personnel, and I would like to take this opportunity to inform you of the results.

The Westinghouse Air Brake Division railroad dynamometer in Wilmerding, PA was used to simulate various service conditions for these tests. In order to collect wear dust samples, the wheel and braking assembly of the dynamometer were completely enclosed by a sheet metal chamber. The chamber was equipped with inlet and outlet filters and a vacuum system to draw air through the enclosure. Air entered the chamber through a Flanders type AA absolute fiber glass filter to assure that it was "clean". Air was drawn out of the chamber through two 8-in. x 10-in. Millipore membrane filters of 1.2-u pore size. Provision was also made to measure the air flow through the chamber, the temperature in the chamber, and the temperature of the wheel tread.

Prior to each phase of testing, the interior of the chamber was washed thoroughly with mineral spirits and then wiped down with clean, dry rags. The brake head, lever arm, and bolts had been shot-blasted prior to the start of testing. These were also cleaned carefully before each test phase. All rivets were covered with metalized tape, and all welds were inspected for smoothness and integrity. The brake shoe was thoroughly brushed before weighing, and the backer plate was wire-brushed.

Four different test phases were run:

1. Passenger car simulation
2. Commuter run simulation
3. Grade simulation
4. Heavy freight simulation

Johns-Manville

Research & Engineering Center

P. O Box 159
Manville, N J 08835
(201) 722-9000



At the completion of each phase all the dust in the chamber and on the Millipore exit filters was collected, combined, and submitted for chemical and electron microscopic analysis. The electron microscope was used to determine the amount of asbestos fiber in the dust.

After analysis of the composite sample for each phase, the sample was separated into airborne and non-airborne fractions by air elutriation. The results of the analysis are given below:

Results of COBRA Dust Sample Analysis

| Phase | Per Cent of Sample Airborne | Per Cent Asbestos Fiber | |
|---|---|---|---|
| | | Airborne Fraction | Total Sample |
| 1 | 20% | 0.012% | 0.03% |
| 2 | 20 | 0.008 | 0.02 |
| 3 | 7 | 0.001 | 0.03 |
| 4 | 12 | 0.003 | 0.05 |

Finally, calculations were made to determine the amounts and percentages of recognizable asbestos fiber actually liberated during the various phases. The results are as follows:

| Phase | Wt. of Fiber Liberated in Entire Phase | No. of Stops in Entire Phase |
|---|---|---|
| 1 | 0.006 grams | 10 stops from 80 mph |
| 2 | 0.003 | 18 stops from various speeds |
| 3 | 0.016 | Continuous 45-minute drag |
| 4 | 0.007 | 20 stops from 40 mph |

In general, our conclusions can be stated as follows:

1. In almost all cases less than 1.0 per cent of the origir fiber in the formula remains as recognizable chrysotile fiber in the wear dust.

2. In every instance less than 0.05 per cent of the origin fiber remains as recognizable in the fraction of the du which is potentially airborne.

Johns-Manville

Research & Engineering Center

P. O Box 159
Manville, N. J 08835
(201) 722 9000



These results are in good agreement with the previous work on automotive brake linings. Furthermore, they substantiate the hypothesis that the extreme heat and mechanical action of the braking process is sufficient to destroy almost all the fiber as it is exposed at the wearing surface.

Please feel free to contact me if you have any questions regarding the test procedures, results, or conclusions.

Sincerely yours,

F. L. Pundsack
Vice President, Research & Development

418877