File Name Brake Wear Dust

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Contents report, letter

Notes

Title: PETROGRAPHIC AND X-RAY DIFFRACTION ANALYSES OF BRAKE LINING WEAR DUSTS

Requested by: W. C. Streib - Request No. FD-345

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SUMMARY

Three samples of brake lining wear dust were examined petrographically to determine whether chrysotile fiber can be distinguished in this type of material. Two of the samples were also examined by X-ray diffraction for confirmation. The samples were from the following brake linings:

(1) 1963 Comet
(2) 1963 Pontiac
(3) Chevrolet 6, Inlite Lining

Petrographic examination showed the following:

The dust from the Comet lining contained an organic binder, plus small percentages of quartz, magnetite, carbonates, talc, and (rarely) a few chrysotile fibers. Chrysotile in sizes recognizable under the microscope constituted less than one per cent of the total.

The dust from the Pontiac lining appeared similar to the one from the Comet lining, showing the same components in comparable amounts. Only an occasional bundle of chrysotile fiber could be detected after prolonged examination of several slides.

The Chevrolet brake lining dust differs somewhat from the others, in that it contain possibly 10 per cent quartz. Talc appears to be absent. A small amount of graphite appears to be present, but was not positively identified. An occasional small bundl of chrysotile fiber was noted, as in Samples 1 and 2.

X-ray diffraction results:

Dust from Comet Lining	quartz	weak pattern
	chrysotile	trace
	talc	trace
	magnetite	trace
Dust from Inlite Lining of Chevrolet	iron	major
	quartz	minor
	magnetite	trace

The "trace" of chrysotile detected by X-ray diffraction in the Comet lining dust could possibly amount to as much as 5 per cent of the total. This would indicate that in addition to the occasional fibers seen microscopically, there may be some

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finely divided and possibly coated fibrils not recognized under the light microscope. Failure of X-ray diffraction to detect any chrysotile in the Chevrolet lining dust sets the chrysotile content of this sample as well below 5 per cent. The Pontiac lining sample was not examined by X-ray diffraction, but the incidence of microscopically recognizable chrysotile in this sample is of the same order as in the Comet sample.

Contents: Summary only.

Approved by F. L. Pundsack Reported by D. Bailey

X-ray Diffraction by J. P. McGourty

eh
cc: K. W. Smith, GH

C. F. Rassweiler, GH
A. C. Smith (3)
F. L. Pundsack
W. C. Streib
H. G. Koch
D. Bailey
J. P. McGourty
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Research & Engineering Center
December 13, 1963

D. Bailey

Brake Lining Wear Dust

You will recall that during his recent visit to the Research Center, Dr. K. W. Smith mentioned a recent theory that asbestos fibers freed in the wearing of brake linings might have some pathological effects. Mr. Koch has obtained wear dusts from three cars and I would appreciate your examining these microscopically to see if you can identify asbestos fibers in this material. I am attaching a work request (FD #345) to cover this work.

I am also attaching the pertinent correspondence and would like to call your attention to Dr. Smith's request for the material remaining after your tests.

Would you please let me know when you have completed your examination, at which time we can again get together with Dr. Smith to determine if any additional work is required.

W. C. Streib

WCS/jep

cc: K. W. Smith, GM
A. C. Smith
L. R. Blair
F. L. Fundsack
H. G. Koch
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Research and Engineering Center
November 27, 1963

File: 456-G

Dr. K. W. Smith - GH

Brake Lining Wear Dust

I am enclosing three envelopes containing dust removed from the brakes of the following cars:

Car	Lining	Mileage
Comet	PC-2308/PC-3049	1266 miles
Newport	PC-594/DM-1618	540 miles
Chevrolet	Inlite equipment	9900 miles

You will find that the dust consists partly of ferrous particles, presumably abrasion products from the cast iron brake drums. The remainder should be predominantly abrasion products from the brake lining themselves. We can supply information on the composition of the brake linings used in the first two cars. The third car was equipped with competitive lining, a composition not known to us, but undoubtedly containing asbestos fiber.

H. G. Koch

ek/GK

cc: W. C. Streib
C. L. Meserve

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