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FERODO LIMITED

TURNER & NEWALL LIMITED

CHAPEL-EN-LE-FRITH
STOCKPORT
SK12 6JP
ENGLAND

16 January 1978

your ref

our ref JM/JW

Mr R C Rogers
Nutura Corporation
311 Plus Park Blvd
Nashville
Tennessee 37217
USA

Dear Bob

I am taking the opportunity of Ron's visit to send you the enclosed report prepared by Martin Milne in conjunction with Don Hatch. I hope this information will be helpful, but if you have any further queries please do not hesitate to write again.

Best wishes.

Yours sincerely

J Marchant

Enc.

3/13/78

Neil - Butch

Copy of English Ferodo - Nutura as mentioned JM

Copy - All Sales
A. Sloane
Mike
D. Rex
(2)

Skip - Stanley

Relating to the absence of asbestos fibres in the brake linings & clutch facings

SPNY 004779

DH

Internal Note

From F.M. Milne To Mr. J. Marchant Date 16th January 19 78

Brake Lining Wear Dust

Reference the query from Mr. Rogers of Nuturn Corporation, the evidence which we have collected over several years shows that there is very little crystalline material and virtually no fibrous material in lining wear dust.

On heating, chrysotile asbestos first breaks down to a non-crystalline magnesium silicate anhydride, which is non-fibrous. At higher temperatures, not usually reached during braking, the anhydride is converted to crystalline forsterite, but this is also non-fibrous. (The conversion temperature is 810 C).

We have recently had independent analyses carried out on two samples of wear dust - one from a disc brake and the other from the main dust collection point for the dynamometers in Test House, and I attach a copy of the report of the Government Chemist. The findings confirm our own analyses. The samples incidentally were taken in the presence of the Factory Inspector for this area.

A particle size analysis of the Test House dust, using microscopy methods, showed the following :

Particle Size (microns)	% Present
Up to 1	91
2	5
3	2
4	1.7
5	0.3

We define a fibre as having a minimum length of 5 microns, with an aspect ratio of at least 3 to 1. In the present sample, even the 5 micron particles did not reach this ratio, and the sample does not therefore appear to contain any fibres within the definition.

These results are in agreement with those quoted by Jacko and DuCharme of Bendix, who found that more than 99.7% of the asbestos used in friction materials is converted to a non-fibril form. Their report 68-04-0020, dated March 73 - Brake Emissions : emission measurements from brake and clutch linings from selected mobile sources - was prepared for and should be available from :

Environmental Protection Agency
Office of Air and Water Programs
Ann Arbor, Mich. 48105

I believe that we can state with confidence that brake lining wear dust normally contains substantially less than 1% of fibrous asbestos.

SPNY 004780