

Ford Motor Company

PLAINTIFF'S EXHIBIT

FD-695

Intra-Company Communication

August 10, 1965

TO: Mr. E. D. Marando

cc: Messrs. A. E. Anderson
R. Dickenshied
J. R. Forrester, Jr.
R. L. Gealer
B. T. Howes
H. W. Johnson
M. L. Jurosek
R. H. Madison
W. A. McConnell
C. W. Phillips
J. W. Richards
T. H. Risk
W. K. Skuba

FROM: Serge Graton

SUBJECT: Brake Lining Program -- July 1965

Evaluation of Current Brake Lining Materials

Three samples of each of two truck brake linings were supplied to us by the Technical Analysis Office for laboratory testing as part of an industry-wide program. These samples have been coded and prepared for Chase Machine and FAST tests, as well as for chemical tests. The light colored sample, though not fully tested to date, has shown two unusual characteristics:

1. In the 650°F pyrolysis, a portion of the decomposition products was insoluble in acetone and clogged the acetone scrubber. This material is, however, soluble in toluene.
2. It wore the cast iron disc on the FAST machine at a rate approximately equal to that of the lining on a weight basis.

Tests have been performed on modifications of the 3M experimental disc brake material (3M-9). At our suggestion, 3M prepared several test batches using a longer fiber asbestos and adding a high temperature phenolic resin to the liquid cashew resin. The results of these tests will be used to guide further developments.

Three primary and secondary shoe assemblies from early production 1963 Lincoln are being tested in order to develop laboratory procedures capable of reproducing the field problems observed with these materials. The secondary linings were tested for Gogan hardness at twenty locations per lining. Samples will be tested in pairs, simulating service behavior, to see if friction or wear instabilities result.

Pyrolysis rates at 650°F are being measured on several disc brake materials to establish relationships with friction and wear results previously obtained on the FAST machine.

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Dry-Clutch Facings

A sample of a new material which can be transfer molded was obtained from Durez. If friction and wear tests are satisfactory, a joint project with Materials Application Department will be started to determine the feasibility of molding the facing material directly to the clutch cushion plate. This construction should provide a high burst speed, a greatly improved wear life (due to the elimination of rivets), and a substantial cost advantage.

Chemical and Physico-Chemical Analysis

It was found that probably the progressive changes in calibration experienced in the pyrolytic gas chromatography studies were due to degradation of the chromatographic column due to operation at 300°C and higher. A study is being carried out limiting peak temperatures to 250°C in order to prevent this degradation. Calibration standards had been established for this stability study.

Equalock Friction Material

A new set of stainless steel Feltmetal Equalock clutch rings have been prepared and sent to Axle Engineering for evaluation. Mild steel Feltmetals have been obtained for similar studies. The characteristics of these materials are being studied in cooperation with the Ceramics and Glass Department on their bearing test rig.

Serge Gratch

Serge Gratch

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