



FRICION MATERIALS RESEARCH

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TO: R. A. Pearce

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SUBJECT: Delco Moraine Non-Asbestos Drum Lining Analysis
DM-9015 (DM-118FE)

Objective: Determine composition of above material. Material tested came from a finished brake shoe. The lining was 9 1/2 in x 2 in x 5/32 in.

Conclusion:

1. The material was a non-asbestos formula containing steelwool and an organic binder.
2. Based upon testing and analysis described below, a reconstruction has been proposed on Attachment 1.

Method: Inorganic chemical analysis was determined semi-quantitatively by Spectro Chem Laboratories and quantified by Schwarzkopf Microanalytical Laboratory. Organic characterization was accomplished by solvent extraction and pyrolysis followed by infrared spectroscopy. Optical microscopy combined with thermogravimetric analysis (TGA), aided in the analysis. J-661 and FAST friction tests were performed to characterize wear and friction properties.

Discussion: The samples tested were obtained by the Troy Sales Office from Luft Alvi, and consisted of one wheel set of 9 1/2 inch diameter shoes. The samples had not been subjected to any use. The Brake linings consisted of two segments that were integrally molded onto each metal shoe in the presence of an adhesive. The shoes were stamped with the identification DM-118 FE.

Chemical analysis provided elemental data which were used for the reconstruction, combined with data arrived at by complimentary procedures. TGA was used to quantify the organic content. Due to the weight gain caused by the iron oxidizing in the sample, TGA was an invalid method for quantifying graphitic carbon. Elemental analysis was used for the graphitic carbon content.

The BaSO₄ content reported was based upon the elemental

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