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Jan 23, 1978
9521 St Andrew's Pl.
College Park, Md.
20740

Mr. M. Ference Sr.
V.P. of Scientific Research
c/o Ford Motor Company
The American Road
Dearborne, Michigan
48121

MICHAEL FERENCE, JR.

DATE FILMED 2 04

Dear Sir;

I am researching a Science Fair project pertaining to asbestos in brake linings and clutch facings. I plan to determine whether there is any decomposition of the asbestos in the linings caused by friction and heat.

To do this, I am in need of some important information, Can you help me?

I need to know how clutch and break linings are made. What type of asbestos is used and where can I obtain some? I need statistics on heat and friction inside the brakes and clutch, such as how much heat is created during both normal use and overuse.

If you have any other information that you think may be helpful, it is more than welcome.

Sincerely yours,

Judy Glick

Miss Judy Glick

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Ford Motor Company

20000 Rotunda Drive
Dearborn, Michigan 48121
Mailing Address:
P.O. Box 2053
Dearborn, Michigan 48121

February 5, 1971

Miss Jody Glick
9321 St. Andrews' Place
College Park, Maryland 20740

Dear Miss Glick:

In your recent letter to Dr. Ference you requested information pertaining to asbestos usage in friction materials.

Ford Motor Company, unlike General Motors and Chrysler, does not manufacture any of its friction materials for brakes or clutches. However, we do have the information you requested. Since this request was for your Science Fair project, I will send you only that information which you could not reasonably expect to find in a large public library, along with some key references to aid your library research.

Brake lining and clutch facing manufacturing methods and formulation are usually considered to be proprietary information by friction material manufacturers. However some detailed information may be obtained from the Chemical Abstracts on friction material patents. I have enclosed as a background on this subject a copy of "Automotive Brake Linings".

Automotive clutch facings are made by a similar process to some of the brake linings; either through resin impregnation of asbestos-based yarns and then winding or weaving, or by making a "wet mix" of resin, asbestos, and fillers and then pressing to shape. In general clutch facings contain more rubber and clay, use longer fiber asbestos.

The asbestos used in both brake and clutch materials is of the chrysotile type and comes primarily from mines in Quebec, Canada. Information on this form of asbestos can be obtained from the Asbestos Textile Institute, Quebec Asbestos Mining Association, and major suppliers such as Johns-Manville Corporation or Asbestos Corporation, Ltd. (Thetford Mines, Quebec, Canada). Technical information on chrysotile asbestos is in the literature, generally pre-1945, with the best papers by Mr. M. S. Badollet.

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Temperatures involved in the operation of brakes and clutches may be confusing. At the friction interface "flash" temperatures approach, and sometimes exceed, 1000°C. The brake lining or clutch facing bulk temperature, normally is below 200°C, but may reach 300°C with severe usage and generally marked by heavy smoke, rapid wear, and "fade" of friction. Portions of a presently unpublished paper "Wear of Brake Materials" have been marked to provide added background on brake temperatures.

The asbestos effluents from brake and clutch operation are currently receiving a great deal of attention. Mr. Lynch of the National Center for Urban and Industrial Health has published a paper in the Journal of Air Pollution Control Association, Dec. 1968, Vol. 18, No. 12, pp 824-826. Several recent papers on asbestos epidemiology have been written by Dr. I. J. Selikoff, of City University of New York, Mt. Sinai School of Medicine. Samples of asbestos also have been enclosed. They have been sealed in plastic bags for your protection. If you must open the bags, please read the enclosed article by Dr. Selikoff first. Indiscriminate handling of loose, dry asbestos should be avoided.

I hope that the information supplied will provide an adequate start for your timely and relevant research project. Should you find further need for information, feel free to ask.

Sincerely yours,

Arnold Anderson
Scientific Research Staff

enclosures

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