

JOHNS-MANVILLE

SALES CORPORATION

PACKINGS AND FRICTION MATERIALS DIVISION

CHESTNUT STREET AT FOURTH • PHILADELPHIA 6, PA. • TELEPHONE: WALNUT 2-5000



The Mall Building

July 17th 1962

General Electric Company
Salem, Virginia

ATT.: J. G. Copland

RE.: JOHNS MANVILLE STYLE 1202 BRAKE
BLOCKS BONDED TO STEEL BACKING PLATES

Gentlemen:

You will undoubtedly recall giving our Mr. G. T. Challoner during the latter part of June a bonded assembly taken from a set of blocks returned to you by one of your customers. The blocks in this set indicated that they were starting to debond.

The sample assembly you gave to Mr. Challoner was forwarded to our Waukegan Factory for their observation and comments and the following is quoted from their report.

"The sample block has been examined and it appears that high temperatures plus shock loads has caused a partial debonding.

As to the maximum temperature the bond will withstand, it varies with the length of time at which it is subjected to that temperature. For example, to debond the brake blocks, 600°F for 30 minutes is enough to destroy the cement. At 500°F, it takes about 2 hours and at 450°F about 24 hours. At the lower temperature, the cement is not actually destroyed, but it becomes brittle so that a sharp blow can shatter it and separate the brake block from the metal backing plate.

The temperature we are talking about is the temperature at the bond, not the temperature at the surface of the block. To get such high temperatures at the bond in service would require extended or prolonged friction heat that could be severe enough to destroy the binder in the brake block itself, especially when one considers the mass of metal available in the brake assembly to absorb and dissipate the heat. The surface of the sample block is badly heat checked and does show evidence that it had been at a high temperature for a considerable time. We would assume that at that time the brake gave off considerable smoke which should have been quite evident to the operator.

In answer to your question as to what is the maximum safe operating temperature and still maintain a satisfactory bond,

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we can only say that at any time the metal plate to which the brake block is bonded is over 450°F, there will be a weakening of the bond. If this happens repeatedly or frequently, then there is a hazard of the block debonding completely.

The ridge along one edge of the brake block is an impression from the bonding jig cavity. The mold is designed about 1/8" shallow so that there will not be any metal-to-metal contact when the jig is under pressure. Very slight flow of the lining stock under the bonding pressure sometimes occurs into this unconfined space, leaving a small ridge such as was evident on this sample block. It is not a defect and in no way affects the performance of the material".

We trust that the foregoing will provide you with the information you requested.

Very truly yours



O. BUSCH, District Sales Manager
Packings and Textiles Department