



PLAINTIFF'S EXHIBIT

FD-1576

Inter Office

Manufacturing Staff

Mr. R. D. Byrom ✓

September 16, 1980

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Subject: Evaluation of Asbestos Substitute Material —
"Siltemp" Usage in T&C Division

As requested, PEO has evaluated the asbestos substitute material forwarded to us from your Indianapolis activity. Rather than attempt a shop-trial type evaluation on specific uses within your division, we examined the effectiveness of the material through vendor-supplied usage data and previous experience with "Siltemp" (a family of flexible, high-silica textile products manufactured by Haveg Industries, Inc., a subsidiary of Hercules, Inc.) in the other Company divisions.

Based on the "Asbestos Nonproduction Materials Utilization Survey", recently completed and submitted to Manufacturing Staff by your plants, we believe we have a good assessment of the asbestos applications for which Siltemp could be substituted. Survey forms indicated that present uses of asbestos-containing materials include packings, gaskets, paper products, insulation, cord and brakes. The specific Siltemp material submitted for evaluation was a textile useful in fabricating welding curtains, drop cloths and stress-relieving insulation. Other Siltemp products are available for use in high temperature hot packing, seals and gaskets, pipe/hose wrap, and high temperature refractories. Each such application requires a case-by-case evaluation of long term performance and life cycle costs. Therefore, our evaluation of the submitted material addresses only those uses for which Siltemp 84CH and Siltemp 188CH can be substituted in asbestos-containing textile applications.

The Material and Safety Data Sheet for Siltemp was examined by Industrial Hygiene and Toxicology Staff to assess any potential hazard associated with the constituents of this asbestos substitute in consideration of its silica and chromium content. The silica does not pose a health risk because it is amorphous rather than crystalline. The chromium content is apparently less than the limit of detectability and should pose no health risk. Industrial Hygiene and Toxicology Staff had previously reviewed Siltemp along with several other asbestos substitutes including: Kaowool (Babcock & Wilcox); Pabco Super Caltemp NA (Fiberboard Corp.); Refrasil (Hitco Corp.); Wollastonite (Interpace Corp.); and Ceramic Cloths XP1000C2 (Bennett-Bowen Co., Inc.). To date, Plant Engineering Office is not aware of any systematic testing program conducted to evaluate the long-term performance of these materials in Company facilities.

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Contact with Haveg Industries, Inc., indicated that the material has been used by Company facilities. These activities were contacted to obtain their evaluation of the performance of Siltemp as it can be used for welding curtains, drop cloths, fire blankets, and stress relieving insulation. Information indicated that Siltemp 84CH is useful for containment of welding sparks and light torching applications whereas Siltemp 188CH is best applied when fabric life and durability could be adversely affected by abrasive wear and by thermal stress relieving operations.

The following items pertain to the use of Siltemp in Company facilities:

- o Automotive Assesmbly Division and Glass Division plants have used Siltemp-84CH and 188CH; experience indicates that Siltemp wears better than asbestos in applications which do not involve high temperature abrasion (due to Siltemp's tendency to become brittle and/or friable at elevated temperatures). Other asbestos substitutes, such as Refrasil, exhibit the same problem under prolonged high temperature usage.
- o Steel Division has used Siltemp-188CH as welding curtains and drop cloths. Reportedly, the material exhibits a life cycle cost which is less than asbestos used for such an application. Although the initial cost is significantly greater than that of asbestos, the rough handling requirements imposed by Steel Division show that Siltemp wears well when compared to asbestos drop cloths.
- o Most users of Siltemp fabricate welding curtains themselves utilizing manufacturer-supplied sewing instructions and materials to prevent edge raveling. Despite the obvious tendency for unsewn Siltemp to fray, Steel Division has not finished the edges of the drop cloths used in vessel rebuilding/relining and the material remains functional. In cases where two pieces of Siltemp must be joined to provide coverage widths greater than available stock, the joined material can withstand high temperature usage while retaining characteristic fabric strength if the manufacturer's fabrication instructions are followed.
- o Steel Division had tried the lightweight Siltemp-84CH to reduce cost but later switched to Siltemp-188CH for those uses where the fabric encountered rough handling.
- o The Atlanta Assembly Plant has used Siltemp fabric as curtain-type, radiant heat shields on ovens. The curtains allow access for maintenance and, reportedly, have effectively reduced the radiant heat load in adjacent work areas. The fabric has been installed for over one year and shows no signs of wear.

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Further work could be conducted to evaluate this material through laboratory tests. Such a testing program would include determination of breaking load, strength retention (to at least 500°F), weight loss (to at least 600°F), melting or decomposition temperature, corrosion and chemical resistance, electrical resistance where applicable (by ASTM D-257), and thermal conductivity (by ASTM C-177). Based on the information supplied, however, Plant Engineering Office does not consider such supplementary tests necessary to the evaluation of Siltemp-84CH and 188CH when these materials are used in accordance with the manufacturer's recommendations.


R. W. Murray

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