



NOTES ON POTENTIAL CERAMIC FIBER USAGE
IN HOT TOPS AND OTHER PRODUCTS

May 15, 1969

Summary:

The development programs for fiber containing hot top recipes have reached the stage where a product has been developed - Profax[®] 570 and Profax 590 - which is marketable to about 10% of the total Hot Top Industry in the United States. Most of this is in specialty products such as electrodes, forging ingots and vacuum poured hot topping. We are at present selling to three customers, these specialty fiber-containing products, and we are testing along with Eureka in a half dozen other customers where we expect to have some sales in 1969.

The fiber containing products have desirable characteristics beyond anything we are able to obtain with Profax[®] type recipes at present. These characteristics are high tensile strength in the green state to allow forming and high tensile strength in the dry state to allow the fabrication and shipping of large unusual shapes. From the metallurgical standpoint, we see no great advantage of the fiber products over Profax although we are able in most cases to achieve similar metallurgical results with a lower thickness of fiber product and a lower density. We, therefore, conclude that the insulating properties of the fiber products are superior per unit thickness to Profax.

The immediate market potential for ceramic fiber-containing products is limited by the raw material cost of these products which is at present in excess of 10 times the raw material cost per pound of Profax ingredients. This is not due solely to the inclusion of ceramic fibers in the recipe, but in addition it is due to the types of binder systems which we now need to get all of the desirable characteristics. Considering just the cost of the ceramic fiber, it can be assumed that if we could achieve a 30¢/lb. or lower cost, we could include the ceramic fiber in other Profax type products, in Kalminex and in coatings.

At present, it seems to matter little whether the length of the fiber is the so-called short fiber or the long fibers from B & W or Carborundum. A reasonably high tensile strength is obtainable with the short fiber system. There is no question, however, that the hot strength of the fiber products is greatly superior to Profax and we should exercise extreme caution in considering fibers of a lesser refractory nature than the present 50/50 Alumino Silicate fibers. We have had considerable difficulty whenever we have had to include slag wool in hot topping products.

Although we will achieve some attractive new sales dollars with new fiber products, the major marketing importance in fiber technology to Foseco lies in future product developments and in transferring the desirable mechanical properties of the existing fiber products to new Profax[®] recipes

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SUMMARY (cont'd)

and In-Situ systems. Each week in the Metallurgical Industry, we see new uses for the ceramic fiber products in bulk, blanket, wet pack and in paper. Although not aggressively marketed yet, these fiber products are beginning to appear with alarming frequency in trade publications and in steel mills sold usually by Carborundum, Babcock & Wilcox, Johns-Manville or Refractory Products.

If what we see going on around us in the Metallurgical Industry and what we read in the trade publications is correct, then the total usage of ceramic fiber and ceramic fiber technology just in the Metals Industry will multiply many times in the next few years. Foseco can either watch this happen or capitalize on what is an inevitable market trend. The following is a table of potential ceramic fiber usage and the assumptions used to arrive at that table. With the exception of the note at the end, all of these numbers apply to hot topping.

Product Assumptions:

1. Present fiber recipe (Dry), 570 Profaxis 30% ceramic fiber.
2. Present high strength experimental Profax® recipes contain 15% of fiber.
3. Present sales of Profax are $2\frac{1}{2}$ Million Pounds/Month.
4. Present asbestos purchases average 70,000 lbs./month.
5. Projected market penetration-double today's volume in 3 - 5 years.

It is likely that we will be selling the fiber in three forms:

- (1) Specialty products - 30% Fiber.
- (2) New low density, high strength Profax - 15% Fiber.
- (3) In-Situ wet pack or spray - 30% Fiber.

Situation 1, Fall-1969

Ceramic Fiber

- (1) Specialty products, Eureka Market and some Foseco 10,000 lbs./mo.
12,000 Hot Tops/Month

Situation 2, 3-5 Years - With restricted specialty products and New Profax Recipes.

- (1) Specialty Products - Eureka and some Foseco 50,000 lbs./mo.
45,000 Hot Tops/Month
- (2) New low density Profax® (double today's volume but 1/3 total material
in product) 160,000 lbs./mo.

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Ceramic Fiber

Situation 3, 3-5 Years - With specialty products, new Profax
recipes and In-Situ programs.

(1) Specialty products, Eureka, Foseco and other	70,000 lbs./mo.
(2) New Profax recipes	100,000 lbs./mo.
(3) In-Situ-Johnstown (100% business).....	36,000 lbs./mo.
Canton (100% business).....	75,000 lbs./mo.
Gary (100%) business	75,000 lbs./mo.
Republic-Chicago (100% business).....	75,000 lbs./mo.
Total 4 Major In-Situs	216,000 lbs./mo.

(If every B.E.U. square in USA was In-Situ lined, potential is
1,000,000 lbs./month.)

The potential for other products containing fiber such as mold or stool
coatings, reheat furnace linings, etc., is unknown at present but if a
practical mold coating or stool coating were developed which could penetrate
50% of either the present mold or stool coating markets (assuming 20% fiber)
then either potential could reach 1,000,000 lbs./mo. of fiber usage.


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