

**SIX MONTHS REPORT
PRODUCT DEVELOPMENT &
TECHNICAL SERVICE DEPARTMENT**

January thru June 1975

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SIX MONTHS SUMMARY

The list sales and gross profits from products developed at the Tigard Gypsum Lab during the past five years were \$1,632,636 and \$267,347 for the first six months of 1975. A breakdown of the products is on page 3.

The commercialization of the firedoor core was the dominant project during this period. Following the optimization of the formula a one-hour rating was obtained for a 4' x 8' door. In cooperation with Engineering and Manufacturing, a plant for producing the cores was established in Tigard, Oregon and in May the plant was turned over to Western Operations. This plant is currently furnishing cores to Vancouver Door Co. and will be capable of furnishing other door manufacturers as arranged by Sales. The firedoor project is being continued to obtain more test data and ratings to expand the marketability of the core and also to look for improvements and cost savings.

The adoption of a new adhesive system for ready mix is progressing and will save 10¢ to 12¢ per pail at every plant except Akron and also help our raw material procurement situation. All but one Canadian asbestos manufacturer is on strike, so a crash program is underway to reduce our usage of asbestos. Other joint system projects are the formulation of a non-asbestos ready mix and a ready mix with superior working properties.

A competitive wallboard survey was conducted with all gypsum board plants participating. The comparative test results indicated that some improvement in core hardness, taper depth and flexural strength were advisable. Changes were recommended which should make our products acceptable without any increase in cost. Another survey is planned in the next six month period which should reveal how effective the changes were.

We were negotiating with Certain-Teed Products Corporation with the idea of obtaining some development rights under a patent they have for producing gypsum fibers. A validity study turned up information which makes their patent very shaky. We have, therefore, abandoned negotiations with Certain-Teed. The importance of the fibers will be dependent upon proven uses for the fiber. Our interest declined when we found that there is some doubt that they would serve as a replacement for asbestos in ready mix.

There has been an increased interest in 5/16" gypsum board for mobile homes because of the possibility of HUD restricting interior surfacing materials used in mobile homes to products having low flamespread ratings. At the request of Sales, we conducted a series of tests to provide mobile

home manufacturers with some information concerning adhesives, fasteners and bracing. Pre-Dec and Sentinel Board are products that we envision selling to the mobile home industry.

All the projects under consideration are detailed in the body of this report.

SIX MONTHS SALES & PROFITS FROM NEW
PRODUCTS DEVELOPED WITHIN THE PAST FIVE YEARS

<u>Product</u>	<u>List Sales</u>	<u>Gross Profit</u>
Pre-Dec Wallboard (all)	\$ 841,666	\$ 71,236
Sentinel Wallboard	835	10
Firedoor Cores	7,488	2,004
*Vinyl Topping (non-asbestos)	53,553	11,037
*Vinyl Bedding (non-asbestos)	7,315	1,457
*Vinyl All Purpose (non-asbestos)	193,371	50,259
*Triple Duty (non-asbestos)	119,508	27,448
Modified Casein Topping	224,294	60,313
Modified Casein Bedding	68,254	15,512
Modified Casein All Purpose	96,505	24,353
Polystyrene Texture	19,847	3,718
Totals	\$1,632,636	\$ 267,347

*Non-asbestos vinyls sold by Acme and Chicago. Some asbestos products at Acme couldn't be broken out. Does not include interplant shipments of non-asbestos products.

PRODUCT DEVELOPMENT SECTION

2. Sentinel Wallboard

The striped woodgrain paper manufactured by Orchard and laminated to 5/16" wallboard has been revived in view of HUD's proposed new flamespread requirements. Western Operations has arranged to have some wallboard paper printed and run on the wallboard machine at Fort Dodge. Some further trials will be made since this would probably be more economical than laminating a separate paper to the board. One drawback of the printed wallboard paper is that a durable and washable clear coating would probably have to be applied.

3. New Ready Mix

An adhesive system consisting of 1.0% Gelvatol 6000 or Air Products 523S and 2% Elvace emulsion has been undergoing market testing. Chicago and Acme have adopted the formula and Marietta and Milford have market tests in progress. In addition to the 10¢ per pail cost savings, our usage of emulsion will be diminished, putting us in a better position in the event of future shortages. Also, two interchangeable PVA sources will make us more flexible. Ancillary advantages are that the emulsion can be added faster, therefore helping increase production and fewer cars of emulsion will be required, so there should be less labor in unloading cars. The market testing so far shows that the product is improved with respect to crack resistance, bond and workability.

4. Ready Mix Topping

The new formula topping developed for Acme, and with their help has received good acceptance. Sales of ready mix topping increased 700% over the same period a year ago.

5. Non-Asbestos Joint Compounds

The non-asbestos vinyl joint compounds being furnished from Chicago were not receiving very widespread acceptance, so another formula was conceived using starch in combination with the vinyl alcohol. This increased the water carrying capacity, made the non-asbestos vinyl more like a casein product and now it is receiving better acceptability. All of Chicago's production has been converted to the starch-vinyl formula.

The effort to come up with a non-asbestos ready mix has been more difficult, but this has been given a high priority in view of the increasing demand for asbestos-free products.

6. Gypsum Fibers

Most of our effort has been to find applications for the fiber and to assist in the validity study with Schuyler, Birch, Swindler, McKie & Beckett. Trials of the fibers in metal casting have been reported to be very successful. A field trial of the fibers in wall texture has also

been favorably reported on. Not much has been done with the fibers in joint compounds because of the priority of other projects and the lack of incentive due to the fibers not being commercially available. There is considerable doubt that the fibers are stable enough to use in ready mix and this is another minus factor.

There are many possible uses, such as in spray fireproofing and flocking for Christmas trees, so there still could be some good potential volume for the fibers. The next step should be a pilot plant to produce a sufficient quantity of the fibers to evaluate other uses and to determine costs of producing the fibers.

MANUFACTURING SERVICES SECTION

e) Field Service - Joe Watt has been doing considerable field work for Western Operations. Some has been in conjunction with the sales of 5/16" board to Champion Homes in Weisser, Idaho and the rest to assist with various customer complaints and problems.

2. Joint System

a) Airborne asbestos fiber measurements - A procedure was established for measuring airborne asbestos fiber. This method involves sampling through pumps worn by plant personnel. The air is pumped through a filter at a given rate so that the volume of air filtered is known. The number of fibers on the filter are counted by the phase microscope method and a computation made of the fiber content per cubic centimeter of air. The current OSHA regulation calls for a minimum of 5 fibers per cubic centimeter. This will change to 2 fibers per cubic centimeter in 1976.

Thus far, Akron, Chicago, Milford and Marietta have been monitored. Acme will be measured shortly. All measurements taken were less than the 5 fiber/cubic centimeter OSHA limitation. However, some measurements taken of the man who adds the raw materials have exceeded the eventual limit of 2 fibers per cubic centimeter. Where the measurements exceed the OSHA limits, dust masks are essential. Test reports from each plant will be on file in the Operations Office, at the respective plant, Mr. Hurd's office and the Tigard Lab. OSHA requires that these measurements be made at each plant every six months. Having this done on the outside would have cost about \$2,000 per year per plant, or a total \$10,000 annually.

b) Grit problem - A recurrence of the grit problem necessitated removal of Calgon T from our ready mix formula. The Calgon precipitates magnesium ions which congregate to form grit particles. There was some concern that this would adversely affect product acceptance, but the removal of the Calgon took place without any reaction.

c) Cracking problem - A revision in the formula at Milford was found necessary to improve the crack resistance. This formula contains more mica, less asbestos and less emulsion. A recent survey of the Baltimore-Washington market indicates that the new formula has overcome the cracking problem.

d) Asbestos shortage - All the Canadian asbestos suppliers except Johns-Manville are on strike, including our major supplier, Phillip Carey. We purchase asbestos from Union Carbide in the U.S., but they are currently oversold as well. A different type of asbestos (7RF02) is being purchased from J-M. A reduced quantity of 7RF02 asbestos is being used without affecting the acceptance of our products. The problem is that not enough total asbestos from Johns-Manville and Union Carbide is available for our needs. All the plant asbestos inventories are low and we are facing interruptions in our production schedules. A reduced asbestos formula is under development to stretch our inventories and prevent any loss of production.

e) Preservatives - After finding and testing a non-mercurial preservative, we find that the manufacturer (Olin Chemical) doesn't have it listed with the EPA. Apparently our potential use would not be sufficient justification for them to do so. Another non-mercurial called Cosan is under investigation.

3. Analyses

About 15 to 20 gypsum analyses are conducted each month. The samples submitted have included plant rock specimens, competitive samples and potassium sulphate (for salt content).