

PRODUCT DEVELOPMENT & TECHNICAL SERVICE
SIX MONTHS REPORT

January thru June 1974

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SIX MONTH REPORT SUMMARY

New products developed in the past five years generated \$1,418,382 sales and \$293,833 profits for the first half of 1974. Cost savings achieved during the first six months are estimated at \$233,000 annually based on the sales for the first half. The individual new products and savings are listed on page 3.

There has been progress on a number of products under development. The latest firedoors are ready for testing at Underwriters in Canada. A non-asbestos dry joint compound is being market tested in Chicago and a recently formulated non-asbestos ready mix looks promising on the basis of preliminary laboratory testing. Elimination of asbestos continues to be a high priority project due to severe manufacturing restrictions involved in using this raw material. Trial runs of a laminated woodgrain paper with printed grooves have been made. This product has been requested by the Distribution Division to fill the need for a low cost non-combustible panel for mobile homes. In an effort to retain casein as an economical joint system binder, a combination casein/starch formula is being market tested. If successful, the formula could be marketed economically at the highest projected price for casein.

The major plant service was the elimination of vermiculite from our 5/8" Type X Firestop. In addition to the cost savings, vermiculite is in short supply so it prevents procurement problems. Now we are attempting to reduce our raw material costs of 1/2" Firestop. Other services performed were assistance with the new flatcar loading procedures, purity analyses of gypsum deposits and core drillings, investigation of Dens-Cote radiant heat ceiling and joint system, relocation of the Speed Set manufacture, and an investigation of a new ready mix container.

Services to Sales included the development of a more economical shaft wall system, a competitive texture survey, field service on joint system products, a structural label for predecorated wall panels, and the comparison of the wear life of U.S.G.'s and our pottery plaster.

During the six months, trainee Howard Schutte was transferred from Tigard to Acme as joint system quality supervisor and Kermit McCarthy was hired as a trainee for the plant organization. We also recruited and hired Dan Harmon for Eastern Operations and he was sent to Brunswick for training.

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

<u>Unit</u>	<u>Product</u>	<u>Sales Volume</u>	<u>List Sales Amount</u>	<u>Gross Profit Amount</u>
MSF	Pre-Dec Wallboard (All)	22,984	\$1,329,751	\$ 279,839
MSF	Shaft-Liner Panels	25	5,632	1,020
MLF	Metal T Splines	75	17,734	1,508
MLF	L-Runners & J-Channels	10	1,208	(148)
BGS	Polystyrene Texture	18,438	59,712	10,109
BGS	Vinyl Topping	2,348	<u>4,345</u>	<u>1,505</u>
	Total		\$1,418,382	\$ 293,833

*ESTIMATED ANNUAL COST SAVINGS
GENERATED IN THE PAST SIX MONTHS

1.	5/8" Firestop vermiculite elimination	\$113,000
2.	Reduction in polyvinyl acetate at Akron, Chicago, Marietta and Milford	31,000
3.	Reduction in polyvinyl alcohol content at Akron, Chicago, Marietta and Milford	66,000
4.	Use of Elvace at Chicago and Milford	<u>23,000</u>
	Total	\$233,000

*Based on first six months sales in 1974

PRODUCT DEVELOPMENT SECTION

PRODUCT DEVELOPMENT

1. Firedoors

The test doors fabricated at Walled Lake Door Company have been at Underwriter's for several months. U.L. has problems with their wall furnace at Northbrook which they led us to believe would be solved within a short time. Months passed during which we contacted them at least once each week. Finally it was decided to ship the doors to Canada. Following that decision, it took another month to get U.L. to ship the doors and now we are waiting for confirmation that they have arrived at U.L. in Canada.

2. Non-asbestos Joint Compounds

a) Bag products - Based on Acme's experience with non-asbestos vinyl bedding, topping and All Purpose, similar products were developed using limestone as the basic filler. In order to prevent contamination with casein products, the non-asbestos vinyls are being manufactured in Marietta and shipped to Chicago. The trials were favorable, so a truckload of the non-asbestos vinyls was shipped followed by two carloads. This should provide enough experience to determine whether these products will be acceptable.

b) Ready Mix - The development of an asbestos-free ready mix has progressed more slowly. A stable viscosity without asbestos is difficult to achieve, but a recent formula developed by Bill Gettel looks encouraging. We are continuing to pursue it on a high priority basis.

3. Replacement for Casein

Casein at the current price of 80¢ per pound would make bedding, topping and All Purpose formulas uneconomical. In other words, they would have to be priced too high to be competitive. One possibility is to phase out casein products entirely and replace them with vinyls. However, the vinyls are not completely proven and, even if they were, there isn't enough vinyl adhesive available. If a replacement or extender for casein could be found, it would give us another alternative.

A formula in which 75% of the casein was replaced by a modified starch seemed to be satisfactory. The starch is one that we have used as an adhesive in the past for joint systems and texture products. About 600 bags were manufactured at Akron and shipped to the Rochester and Wilmington branches. If this product is acceptable, we can continue to profitably furnish a casein formula even if the price of casein reaches \$1 per pound.

absorbs 6% to 7%; so this somewhat negates the advantage gained by the use of the PVA. There are two factors which seem to affect the absorbency of the paper. One is the absorbent bond liner of our paper and the other is the wetting type foams we use.

In order for all plants to use the PVA/asphalt-wax system, it would be necessary to have equipment to solubilize the PVA and meter it into the mixer. Sigurd has a steam generator and some tanks to do this, so we have suggested they use the PVA/AWE system in all their water resistant boards. In addition, some silicone treated paper and rosin size (non-wetting type) foam has been sent to Sigurd to try to overcome the paper absorbency.

DuPont has advised us that there is no polyvinyl alcohol of the type we have been experimenting with available at this time. However, we are inclined to continue the project so the work will be finished whenever the alcohol supply loosens up.

7. Talc Formula Ready Mix

A ready mix formula containing a substantial amount of talc was developed to meet the requirements of the Houston, Texas, market. Even though the formula was well received, only limited quantities have been sold in Houston. Shipments of the formula into other markets have fared better and repeat shipments are being made in several instances. The limestone version of the talc formula has been tried in Atlanta; Georgia; Raleigh, North Carolina; and Grand Rapids, Michigan; apparently with success but without much feedback. For some reason the talc formula has less crack resistance than the regular, so this would have to be rectified. Because of involvement in Elvace emulsion, reduced polyvinyl alcohol, asbestos elimination, and other projects, the talc formula has been allowed to languish. As soon as some other things are taken care of, the talc formula will be reassessed. It is a problem for a plant to have two ready mix fillers to contend with, so we want to select the best one.

MANUFACTURING SERVICES SECTION

e) U.L. follow-up service - The investigation of a new procedure involving more scrutiny on our part and less from U.L. is being handled by Eastern Operations. Thus far, there has not been agreement on the details of the new procedure.

2. Pre-Dec

Brunswick has been using two coaters to obtain a uniform texture pattern. Don Klus made a plant investigation and noticed the doctor roll was out of round. A new doctor roll was prepared and installed. Brunswick is now back to making a uniform pattern with one coater roll.

3. Joint System

a) Quality problems - Almost as soon as the grit problem in ready mix was solved, we were faced with complaints of high shrinkage and inferior working properties. It had been determined that the combination of Dowicil preservative and Calgon dispersant reacted to form grit particles. In view of the shrinkage complaints, Calgon was put back into the formula. This has resolved the shrinkage complaints without causing a recurrence of the grit.

Excessive cracking in ready mix at Akron, Chicago, and Milford suddenly became a quality problem. This was finally traced to our switch to Reichold polyvinyl acetate resin when DuPont discontinued the manufacture of polyvinyl acetate. The problem was traced to the fact that Reichold emulsion contained only 4% Dibutyl Phthalate whereas the DuPont emulsion had 8%. We requested that Reichold increase the Dibutyl Phthalate plasticizer to 8% and this seems to have corrected the problem. As a quick measure to improve the cracking, we had increased the mica and reduced the asbestos; but these ingredients are now back to their normal levels.

b) Raw material shortages - We are on an allotment basis in our purchases of polyvinyl acetate and polyvinyl alcohol. DuPont's exit from the homopolymer vinyl acetate market put us in a position of buying from Reichold exclusively. We had been evaluating a copolymer emulsion called Elvace and, after field and market testing, converted Milford and Chicago. Initially this saved 15¢ per pail, but recent increases in the price of Elvace make the current savings 11¢ per pail.

Even more critical is the short supply of polyvinyl alcohol which we use in ready mix and dry vinyl products. Some investigation was done on a summer formula ready mix having 50% less polyvinyl alcohol. Market testing of this formula was started immediately. There was no unfavorable reaction (in fact, the working properties were probably improved), so we now have all plants using the reduced polyvinyl alcohol formula. This will keep our ready mix operation going and also free up some alcohol for use in the dry vinyl products.

c) Speed Set - The location of Speed Set manufacturing was moved from Acme to Blue Rapids. We simultaneously introduced a new Speed Set formula which was developed by Howard Schutte when he was in training at Tigard. The new formula is substantially improved in mixing and working properties. The relocation to Blue Rapids will result in lower costs and should improve our service to the other plants. Also, Blue Rapids' larger size blending equipment and the readily available Denscal should permit better response to orders.

d) Plastic bags for ready mix - The cost of filling four-gallon cartons and the skyrocketing cost of metal pails has caused more emphasis to be put on the plastic bags. One thousand 6-mil printed plastic bags were purchased. An adhesive has been found that will tie the bags together during shipment so the problem of the bags sliding around has been solved. Now what we need is to determine the market acceptance of the bag material. The projected cost per bag is 30¢, and the filling cost with the proper equipment should be no more expensive than filling pails and significantly less than the cost of filling four-gallon boxes.

e) Continuous viscosity equipment - The continuous viscosity recorders have been installed at three plants. Thus far only Milford is using the equipment to good advantage.

f) Field service - George Fowler has been establishing contacts with customers in the markets serviced by Chicago, Milford, and Marietta. He has concentrated on Chicago recently because of the testing of a non-asbestos vinyl and because Chicago needs more business. He has also responded to field problems in Baltimore, Maryland; Raleigh, North Carolina; and Lexington, Kentucky. George also coordinated the relocation of Speed Set manufacturing and has arranged numerous plant trials at Marietta and field trials in the Atlanta market.

g) Non-mercurial preservative - The restrictions on the use of mercurial preservatives make the elimination of mercurials a worthwhile undertaking. At Chicago we cannot use mercurials at all because our wash-up water goes directly into the municipal sewage system. The Dowicil preservative is not as effective as we would like, so a search was made for a more effective non-mercurial preservative. Out of about 25 candidates, two were found to be worthy of plant trials which will be made at Akron and Milford.

4. Analyses

It has been necessary to conduct analyses two days some weeks in order to handle the number of samples submitted. We have had extra samples from Grand Rapids where they have encountered high concentrations of salt recently. In addition to the regular analyses Fort Dodge core drillings, competitive products and by-product gypsum samples were submitted.

MARKETING SERVICES SECTION

MARKETING SERVICES

1. Shaft Wall System

A new shaft wall system has been devised by Ray Hinkel at the request of Sales to compete with other systems which are less expensive to install than our shaft wall. Since our T-stud wall was developed, U.S.G., Flintkote and Kaiser have come out with cavity walls with a single stud and utilizing 1" wallboard as opposed to the 1-5/8" gypsum panels in the G-P shaft walls. The new method involves an I-stud with tabs punched out of the web to engage 1" panels. The finish side would be faced with two layers of 5/8" Firestop. This system should be fully competitive and may even have some advantages over the other systems. Indications are that we can pass the two-hour fire test at the University of California. This is where U.S.G. and Kaiser have tested their new shaft walls.

Because of the investment required for testing and dies for the new system, it has been decided to proceed with structural tests only at this time. We have purchased hand formed I-studs for this purpose. Enough studs were purchased for the fire tests as well in the event that we decide to proceed.

2. Texture Survey

A comparison was made of our texture products with that of several other manufacturers. Our textures (both wall and ceiling) ranked high in spraying properties, whiteness and bond but some competitive textures have better hiding properties than ours. This is something we will investigate. Our textures were the only ones that were asbestos free. We have probably not taken advantage of this.

3. Structural Labeling for Predecorated Wallboard

We had previously conducted shear tests on ceiling (truss roof) sections using Pre-Dec and established a U.L. label to be used in combination with the U.L. flamespread label. Certain states require structural ratings for walls, so Sales requested a similar label for 1/4" and 5/16" wallboard that is decorated with a Pre-Dec coating, a printed pattern, or a laminated film for use on partitions. After contacting U.L., it was evident that it would require many months in order to conduct the tests and attain the ratings. It was decided to have General Testing Inc., who are local, witness the racking tests and provide a labeling service. The tests were completed and now three plants are equipped to label 5/16" wallboards certifying a racking resistance of 115 pounds