SIX MONTHS REPORT
PRODUCT DEVELOPMENT &
TECHNICAL SERVICE DEPARTMENT

July thru December 1974

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SIX MONTHS SUMMARY

The net sales and gross profits from new products developed during the past five years were $1,083,491 and $205,859 for the last six months of 1974. The figures for individual products are shown on page 3.

Recent developments have caused us to emphasize certain projects in the last half of 1974. One of these events was the successful one-hour firedoor test at Warnock Hersey, Ltd. Processing equipment was assembled to be certain that full-scale firedoor cores could be produced and to decide whether these cores would be suitable for making firedoors. Also, a survey was made to estimate the market potential for firedoor cores. It looks like we can manufacture an acceptable firedoor core and the market picture and profit potential are good, so plans were made for a small manufacturing plant.

Another development which affected priorities was the increase in the cost of casein joint compounds. At Chicago we replaced casein products with a line of vinyl joint compounds and at Akron we adopted a combination casein/starch formula. These changes substantially improve the profitability of the products involved at both locations.

Still another influence on project emphasis grew out of the OSHA restrictions on the use of asbestos fiber. These regulations make it desirable to eliminate asbestos from as many products as possible. The vinyl joint compounds currently being manufactured at Chicago are asbestos free. This leaves only the casein products manufactured at Akron and all Ready Mix still containing asbestos fiber. However, our textures and some industrial plaster products contain talc which may fall under the same restrictions as asbestos fiber. Concurrent with this effort, we are purchasing equipment to make measurements of airborne asbestos and talc. In order to comply with OSHA regulations, it would have cost more than $10,000 annually to monitor airborne asbestos fiber at each plant as required by OSHA. It will cost a fraction of that to make our own measurements.

Evaluation of patent #3,822,340 covering gypsum fiber crystals by Western Operations has stirred some interest in potential uses for gypsum fibers. We will be looking into this further and possibly make some cooperative arrangement with Franklin Key (owned by CertainTeed Products) who is the holder of the patent.

Gypsum paneling, or Sentinel board as it is called, was manufactured on a limited basis at Fort Dodge. This 5/16" thick gypsum board with 1.5 mil striped woodgrain paper overlay is to be sold to the mobile home market. A flamespread rating of 20 and a structural rating have been obtained. Additional equipment is needed to handle and guide the thin paper overlay, but this expenditure has been postponed pending the determination of a sufficient market for the product.

Two personnel changes were made since last summer. Joe Watt has assumed the field service responsibility for Western Operations in addition to continuing his Divisional technical service activities for our department. Kermit McCarthy completed his training in Tigard and has transferred to Fort Dodge as Quality Supervisor. The recruiting and training program has been discontinued, at least for the time being.

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

Product	List Sales	Gross Profit
Pre-Dec Wallboard (all)	$ 840,019	$149,532
Sentinel Wallboard	9,519	(5)
Polystyrene Texture	16,416	4,030
Vinyl Topping (non-asbestos)	27,668	5,505
Vinyl Bedding (non-asbestos)	5,619	1,368
+Vinyl Triple Duty (non-asbestos)	14,785	(64)
Vinyl All Purpose (non-asbestos)	1,865	73
*New Casein Topping	93,500	28,500
*New Casein Bedding	35,800	7,270
*New Casein All Purpose	38,300	9,650
	$1,083,491	$205,859

+Includes non-profitable old formula containing asbestos which could not be broken out.

*Estimates based on Akron production figures. Profits are conservative because of combining results with old casein formula which was less profitable.

PRODUCT DEVELOPMENT SECTION

2. Non-asbestos Joint Compounds

a) Bag products - After several months of furnishing non-asbestos vinyls manufactured at Marietta to the Chicago market, it was decided to phase out casein at Chicago and manufacture the asbestos-free vinyls there. It is too early to assess the impact of this transition, but there was no future economically in continuing to market casein joint compounds.

b) Ready Mix - Field testing of a non-asbestos Ready Mix is underway in the Rochester, New York, market and the initial report was favorable. A disadvantage of the non-asbestos formula is that it has a higher raw material cost of about $.12 per pail.

3. Modified Casein Joint Compounds

Combination casein/starch formulas were developed in order to counteract the substantial increase in the cost of casein. The field testing and eventual transition at the Akron plant proceeded almost without comment. Raw material savings are $.34 per 25-pound bag. We chose this approach at Akron to use our commitment for casein and also as an alternative to the non-asbestos vinyls we are producing at Chicago. It is conceivable that some customers will wish to continue using casein and others will change to vinyl, so we are prepared to satisfy both with interplant shipments. It is not practical to manufacture both products at the same plant because of contamination.

4. Woodgrain Paper Laminate (Sentinel Board)

Fort Dodge laminated enough of the striped grainboard paper from Orchard to establish that some additional equipment is necessary to improve the percent perfects. At the present time the market is being studied to be sure the investment in equipment can be justified.

A U.L. flamespread rating of 20-10-0 and a structural or racking resistance of 115 lbs./lin. ft. were obtained through testing of the Sentinel board. Arrangements have been made to certify these results by printing the U.L. flamespread and General Testing structural ratings on the product.

5. Ready Mix Topping

A Ready Mix that has good working properties and easy sanding is under development. We have been furnishing a product from Acme and

have made some limited shipments from Milford, but further refinements are in progress.

6. Carbon Fibers

We requested samples of the continuous carbon fibers being produced by Union Carbide. Presently these applications are restricted to exotic applications, such as golf club shafts, but economies in the manufacture of the carbon filaments are expected to make other uses practical. Since carbon fiber has a 3000°F melting point, they have an obvious possibility as a fire resistant reinforcing for gypsum board. The carbon fibers cut and dispersed well, although they were softer than the glass fibers we use. However, the fibers are very slippery and tend to pull out of the calcined gypsum during the fire exposure, thereby limiting their value as a reinforcing. Another possibility we will look at is a mixture of glass and carbon fibers, but at this time the carbon fibers seem to have questionable value.

MANUFACTURING SERVICES SECTION

MANUFACTURING SERVICES

1. Wallboard

a) 1/2" Type X Firestop - After completing the laboratory investigation, we contacted Underwriters to determine what kind of test program would be necessary. U.L. requires so many tests that the program is much more expensive than we had anticipated (over $20,000). On the basis of the high cost of the test program outlined by U.L. and also the difficulty in passing some of the tests, we will not pursue the project at this time.

b) Wallboard core strength - Compressive strength tests were conducted on cubes cast from the board slurry and sent to Tigard from each plant. The only conclusion drawn was that all the values were lower than they were several years ago and that any further decrease in core strength might be detrimental. Fort Dodge has found that a finer Raymond mill grind improved their strength and bonding properties, but the loss of production to achieve the finer grind cannot be justified. Other means for grinding finer are under consideration.

c) Pre-Dec at Sigurd - The possibility of manufacturing Pre-Dec at Sigurd using an extra roller coater from Acme to apply the paint and the board kiln for the drying are under investigation. The object is to use the board machine equipment to manufacture Pre-Dec on the weekends when it is idle.

d) By-product gypsum - Samples of by-product gypsum from DuPont at Richmond, Virginia, and American Cyanamid at Savannah, Georgia, were examined. Both materials appear to be suitable for use in the manufacture of wallboard. Our interest in by-product gypsum at these locations is nil, so we will not engage in any further investigation.

2. Joint Compounds

a) Emulsion for Ready Mix - Purchasing was able to obtain enough Elvace emulsion from DuPont for Akron and Marietta in addition to Milford and Chicago, who converted to Elvace earlier in the year. Replacing Reichold's polyvinyl acetate emulsion with Elvace saves $.11 per pail, so far more savings are being realized than was originally projected.

b) Cracking problem - The most serious joint compound problem has been excessive cracking in Ready Mix. A reduction in the mixer speed (to reduce air entrapment) and a slight formula revision was

effective at Chicago, but not at Milford and Marietta. Akron, for some reason, has not had the cracking problem. A major formula revision may be necessary at Milford because of the severity of the problem there.

c) Spoilage and preservatives - During the end of the summer, a rash of Ready Mix spoilage problems occurred. The combination of warm weather, inadequate cleanup procedures at the plants and marginal preservative levels were responsible. We have recommended a more thorough inspection and cleanup of the mixers and emulsion tanks, and have increased the level of preservative protection at Acme where the problem was most acute.

Evaluations of sodium omadine preservative were favorable and additional testing is underway. The objective is to eliminate the mercurial preservatives without sacrificing protection against bacterial contamination.

d) Packaging of Ready Mix - The plastic bag proved unsuccessful, so attention was devoted to means for reducing the cost of Ready Mix in four-gallon cartons. Much of the hand labor of forming boxes and stapling can be eliminated by a machine manufactured by 3-M. It has been recommended that this equipment, which forms and tapes the carton, be purchased for Acme.

e) Measurement of airborne asbestos fibers - George Green took a course offered by the National Institute of Health to learn the procedures and equipment which are necessary to take air samples and measure the fiber concentration. OSHA standards permit five fibers per cubic centimeter and require plants using asbestos to make measurements every six months. Having this done by an outside laboratory would cost $1,000 for each measurement. We are setting up to make the determinations ourselves in order to comply with OSHA but minimize the expenses in doing so. A phase microscope was purchased for making the fiber counts and the air sampling equipment has been ordered from Mine Safety Appliances. We expect to have all the equipment and begin making measurements at the plants shortly after the first of the year. However, M.S.A. has failed to meet three promise dates thus far.

3. Gypsum Analyses

Elaine Zulauf has been making an average of about twenty analyses per month. Most of the samples come from Akron where the purity is marginal and Grand Rapids where there has been a high concentration of salt.

3. Sweets Catalog Literature

A thorough review of the Sweets literature was made to bring it up to date and make it technically accurate.

4. U.L. Approval

We have received Underwriters' approval to use a laminated panel (two layers of 1/2" Firestop) instead of 1" core board in our T-stud shaft wall system.

5. Field Service - Joint Compounds

George Fowler has spent considerable time in the Chicago and Baltimore/Washington D.C. markets. In the case of Chicago, we were distributing the non-asbestos vinyl compounds and gathering comments as a preliminary to the change from casein to vinyls. The opportunity was also taken to acquire competitive products and to sample Ready Mix and Speed Set among prospective customers. In Baltimore and Washington D.C. the objective was to overcome adverse comments on our Ready Mix by field testing various improved formulas. We have also been field testing a Ready Mix topping there.