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S U M M A R Y

The highlights of gypsum research in the first half of 1970 have been:

1. The development of a formula and continuous method of manufacturing a predecorated ceiling board for mobile homes. The first shipments of the product, which is called "PreDec", were made in February. We have already shipped over two million feet this year.

The most important thing about PreDec is that we make about 23% profit. We were fortunate in having some conveying equipment at Acme and some mixing equipment at Brunswick that could be used to manufacture PreDec, so the investment was only about \$20,000. We should sell 10 million feet of PreDec per year, and if we do the return on investment will be about 650%.

2. We have recommended that the company enter the field of mastic adhesives after an extensive investigation of formulas and manufacturing methods. These water base adhesives, which are dispensed from tubes, are used to install plywood paneling and gypsum wallboard. The product was field tested and has been judged acceptable. We should return \$80,000 annual profit with a \$60,000 investment. For the most part, we will be using our existing joint system facilities to expand the company sales and profits with this new product.
3. Acme is closer to a complete change from limestone to air separated gypsum as the basic filler in their joint system products. We are already beginning to realize savings that will eventually reach \$100,000 per year at Acme. Based on this progress, it has been recommended that a joint system plant be built at Sigurd with air separated gypsum as the major filler. The cost of a joint system manufacturing facility at Sigurd will be about \$75,000. Sales has projected that we can return \$46,600 per year on sales of \$417,200.

We have learned through experience that our chances for success in developing a new product is much greater when there is a ready market for the product. This was shown in the past 6 months by the instant success of PreDec as compared to the disappointing performance of our Radiant Heat Panels. We still believe that sales of the Radiant Heat Panel will grow, but it will probably be on a gradual basis and over a period of years as the market for electric heating increases. We have de-emphasized radiant heating in order to concentrate on products where we have ready made markets such as firedoor filler, mastic adhesives, and cost savings programs such as gypsum filler for joint system. One exception to this is the project to develop a tapeless joint system. This product would be used in factory built homes, an important future market. We are also trying to bolster sales of present product lines by conducting essential fire and sound tests or by developing partition

systems that will give us substantial technical advantages in selling our major products. A more detailed account of each project is included in the body of this report. Also shown are the 6 months sales and profit figures for some of the products that have been developed by gypsum research. These products contributed 8.7% to the Division sales and 44.3% to Division profits in the first half of 1970.

Every project undertaken by the Research Department has a profit objective. All projects are approved and reviewed by Sales and Manufacturing Department Managers to assure that our efforts are being spent in the best interest of Georgia - Pacific.

SIX MONTH SALES AND PROFITS OF PRODUCTS DEVELOPED THROUGH RESEARCH

January 1 - June 30, 1970

<u>Product</u>	<u>Sales Volume</u>	<u>List Sales</u>	<u>Gross Profit</u>
Denscote Base (all)	6,442 MSF	\$ 226,978	\$ 28,445
Tile Backer Board	5,622 MSF	379,005	142,942
1/4" Sound Deadening Board	3,382 MSF	103,547	19,730
Radiant Heat Panels	119 MSF	45,834	616
PreDec Wallboard	2,178 MSF	124,681	28,593
Ready Mix	401,126 Pails	1,228,156	135,956
Ready Mix	3,272 Cartons	7,908	(649)
Triple Duty	2,205 Tons	273,744	31,805
Denscote Plaster (all)	1,380 Tons	75,711	10,853
Ram Process Plaster	94 Tons	8,400	4,542
Tooling Plaster	.2 Tons	10	3
Thermostats	480 Each	2,863	708
Insulated Nails	140 "M"	1,076	204
Bestex A	860 Tons	110,498	4,975
Bestex B	68 Tons	11,532	591
Bestex C	132 Tons	21,495	(1,345)
Bestex D	156 Tons	<u>17,956</u>	<u>330</u>
TOTAL		<u>\$2,639,394</u>	<u>\$ 408,299</u>

P R O D U C T I M P R O V E M E N T

1. Gypsum Filler for Joint System

The main reason we are so interested in using gypsum rather than limestone as a filler for joint system is to reduce the raw material costs at Acme. We presently pay about \$20 per ton for limestone at Acme, and we can make the gypsum available for \$3 per ton, or perhaps less. There are some other side benefits to be gained such as having higher quality products and less complicated formulas with fewer raw materials to inventory. In spite of the advantages, we have had some problems in making this transition. The gypsum formulas contain vinyl adhesives, and as such are different, so we have had to do a lot of formulating to make them acceptable. We have also encountered some resistance from sales in making such a drastic change. The gypsum vinyl formulas aren't compatible with our competitive casein/limestone formulas, therefore causing complications. This has necessitated a lot of field testing. The latest trials, however, indicate that our gypsum products are not only satisfactory; they are superior to the old casein limestone formulas, and we stand to gain more business in addition to reducing the raw material costs. All of this has been very timely as Acme's volume of joint system had been slipping as a result of the joint system business in their shipping area being so competitive. In addition to the raw materials costs, our labor costs at Acme are high, and the lower volume of business only makes the situation worse. We are planning to meet this competition in order to get the volume up and we'll need lower costs to get the job done. A modernization of the equipment at Acme will be considered along with the program to reduce raw material costs.

Our success at Acme with the gypsum formula has induced us to look at Sigurd as a potential joint system producer. We are not currently competitive on the west coast with joint system. If Sigurd had to use limestone at \$18 to \$20 per ton, they wouldn't be able to compete in the market place, but the gypsum formulas will allow us to compete in the northwest and in certain areas of the southwest as well. After all the figures were put together, a Sigurd joint system plant looks like a good moneymaker.

As we gain more experience using gypsum in joint system, we may wish to consider the economics of a similar change at Chicago and Akron plants. Marietta will not be considered because of the low cost limestone they have available. We expect the savings at Acme to exceed \$100,000 annually when they have made the complete transition. The potential savings at Chicago and Akron would be less because of the higher ratio of gypsum/limestone costs at those locations. Even if the savings are half what they are at Acme, it will still be worthwhile looking into.

2. New Textures

We have never been much of a factor in the marketing of joint system textures that are applied to walls and ceilings. The business is substantial, but we have never had competitive products. With Sigurd as a potential joint system producer it will be essential to have a line of texture products that we can offer. The reason is the large amount of texture used on the West Coast, and the fact that it is sold in conjunction with the other joint system products. We have assigned a high priority to this project so we'll be ready to go with textures as soon as possible at Acme and before the Sigurd plant starts. Most of the effort will be with gypsum as the filler, but limestone textures will also be investigated. We will be seeking:

- a. a polystyrene aggregated texture for ceilings
- b. a vermiculite aggregated texture for ceilings
- c. a perlite aggregated texture for ceilings
- d. a non aggregated texture for walls

The formulating is well underway, and we expect to begin field testing by late summer.

3. Speed Set Joint Compound

In the last 6 months of 1969 we reformulated our old One Day Joint Compound and Sales renamed it "Speed Set". This product overcame the previous problems of coarseness and poor workability and also eliminated the necessity to prime before texturing. The initial experience with Speed Set indicated that it gained viscosity after initial mixing and was overly plastic. Some revisions were made to overcome these objections, and the reports coming from the field now are very favorable. A new bag was designed in order to escape the unfavorable reputation of the old One Day Joint Compound.

4. Round Edge Board

Tolerances and specifications for our Round Edge Wallboard were established after consulting with our patent attorneys. Our Round Edge Board is distinctively different than the patented edges of U.S.G. and National Gypsum, so we are outside their claims. In addition, our edge has some advantages over the others. These are; 1) smaller groove so less joint compound is required to prefill the groove, 2) the score mark gives us more control over the curvature so our edges are more uniform than U.S.G.'s, and 3) the smaller groove permits taping with "Speed Set" without having to prefill the groove first. We are seeking a patent on our edge and have offered to license others to manufacture our type round edge board. The

PATENT SECTION

1. Round Edge Board

The patent application for our method of manufacturing round edge wall-board was submitted to the patent office in March. We also offered to license all other gypsum companies to manufacture round edge board by our method. So far, we have no takers.

2. Firestop Improvement

We had received an action from the patent examiner rejecting our patent claims on the clay-vermiculite-glass fiber Firestop formula. A number of tests have been involved to counter the examiner's objections. Our current patents will expire within 3 years, meaning that royalties of approximately \$250,000 per year will cease unless some means can be found to extend them. If we can have the improvement patent allowed, we should retain about 25% of our royalties. This makes our efforts on this patent worthwhile.

3. Gypsum Filler for Joint System

We have been preparing a patent application covering the method of using gypsum as a filler in joint system. This has substantial economies and we want to protect our advantage. If we can force other companies to consider using gypsum in order to compete with us, we may have some licensing possibilities.

4. Radiant Heat Panel

We will not pursue a Canadian version of our Radiant Heat Panel unless there is some definite licensing possibility in Canada.