

BESTWALL GYPSUM COMPANY
SEMI-ANNUAL RESEARCH AND DEVELOPMENT REPORT

JULY 1, 1963 TO DECEMBER 31, 1963

PLAINTIFF'S EXHIBIT

GP-1330

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FOREWORD

This report covers the activities and accomplishments of our research program for the last six months in 1963. Our personnel was changed somewhat when Mr. E. A. Smith left the Company in August to attend medical school. Mr. N. F. Morrone was transferred from the Quality Department, bringing the Research Division back to six men including the writer. We believe that Mr. Morrone's talents can be put to broader use in the Research Division.

On the basis of the record of last year's R&D expenditures, projects presently underway and future projects being contemplated, a budget for 1964 was prepared and submitted to Management. The purpose of the budget is to have a record of the expenses, and to see that our money is wisely spent. Our total 1964 Research expenditure is expected to approximate \$150,000.

Included in this report is the market performance of products which have been developed through research. The fire ratings and other technical information developed for Sales and certain product improvements cannot be clearly assessed. However, we trust that these accomplishments have made us more competitive and therefore have favorably affected our Sales.

The major portion of the report is devoted to the progress of the various projects. For clarification, it is separated into three sections:

- (1) Projects Completed
- (2) Projects Nearing Completion
- (3) Projects Underway

MARKET PERFORMANCE OF NEW PRODUCTS

JULY THRU DECEMBER 1963

<u>PRODUCT</u>	<u>SALES VOLUME</u>	<u>MILL BASE SALES</u>	<u>ESTIM GROSS P</u>
1. Fireston 120 Tile	95,000 sq.ft.	\$ 13,572	\$ 4,37
2. Grabit Adhesive	37 tons	6,899	3,97
3. One Day Joint Compound	388 tons	64,501	18,29
4. Ready Mix Joint Compound	482 pails	2,136	6
5. Dens-Cote Plaster	67 tons	3,894	1,22
6. Dens-Cote Tape	1452 rolls	1,452	59
7. Dens-Cote Base (T.C.Lath)*	240,000 sq.ft.	9,720	3,62
8. 1½" #8 Drywall Screws	372 boxes	<u>1,098</u>	<u>28</u>
		\$103,272	\$32,41

*Amount of Dens-Cote Base which normally would be sold with 67 ton of Dens-Cote Plaster. Actually, increase in volume of Dens-Cote Base over the first half of 1963 was 220,000 sq. ft.

PATENT INFORMATION

Patents Issued - None

Patent Applications Submitted (Method of Processing Synthetic Gypsum)
(One Day Joint Compound)
(Grabit Adhesive)

Patent Applications Being Prepared: Synthetic Gypsum (Canadian)
Continuous Calcination (2)

1. JOINT SYSTEM SPRAY TEXTURES - R & D 261

Objective: To develop pre-aggregated textures for addition to our line of Joint System products. Another objective is to eliminate the necessity for a primer over surfaces where One Day Joint Compound is used prior to texture applications. Three new products and one improved product are our goal. The new products are:

1. Simulated Acoustic Texture
2. Sand Finish Texture
3. Masonry Spray Texture

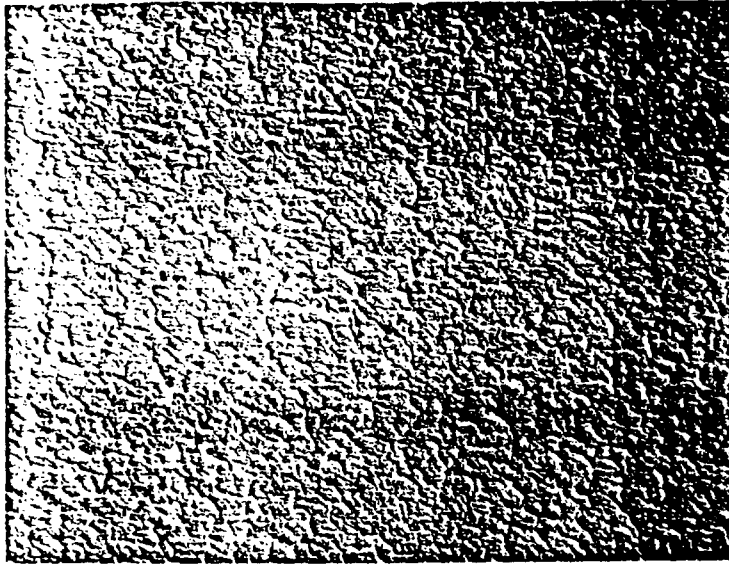
Our standard texture is to be improved so that it will hide One Day Joint Compound and Topping Compound and can be hand or spray applied.

Investigation: All four products have been formulated and appear to give the desired finish. In addition, Laboratory tests show that all of these products will hide applications of One Day where a final coat of topping compound is used in conformance with specifications. In addition, all of these textures will be whiter than competitive products and have excellent application properties. The plain texture, in particular, has been tremendously improved to the extent that it hides as well as paint and has versatility in making a variety of textures possible from the one product.

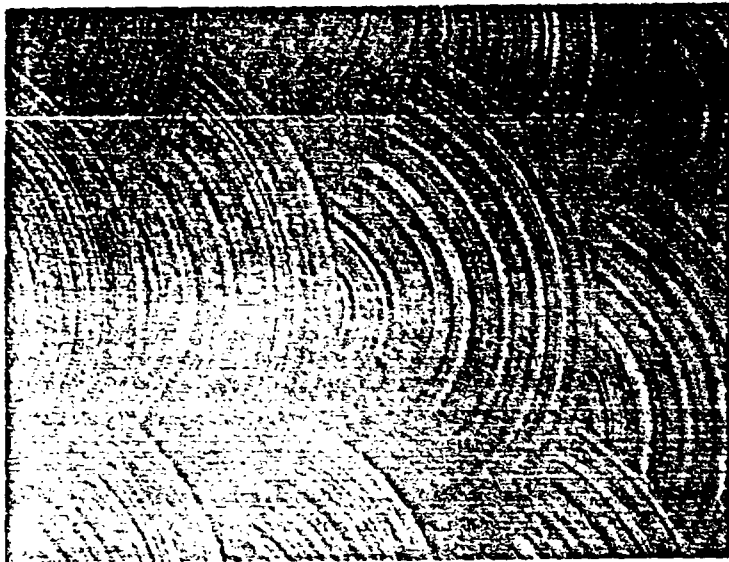
The type of surfaces possible with this texture, as well as those from the simulated acoustic and sand finish products, are shown in the attached photographs. The masonry spray texture also requires that it have rust inhibitive properties. There is no similar competitive product, so this will be a first for Bestwall, if this texture is successful in actual use.

Thus far, very few trials have been made. A number of trials which were scheduled were either postponed or cancelled during the reorganization of the Sales Department. A limited release for the plain, sand finish, and simulated acoustic textures is being considered, in order to expedite the field performance evaluation. Texture products represent only 4% of our Joint System sales, and it is felt that this figure should be as high as 10%. We believe these new textures will help bolster our Joint System sales.

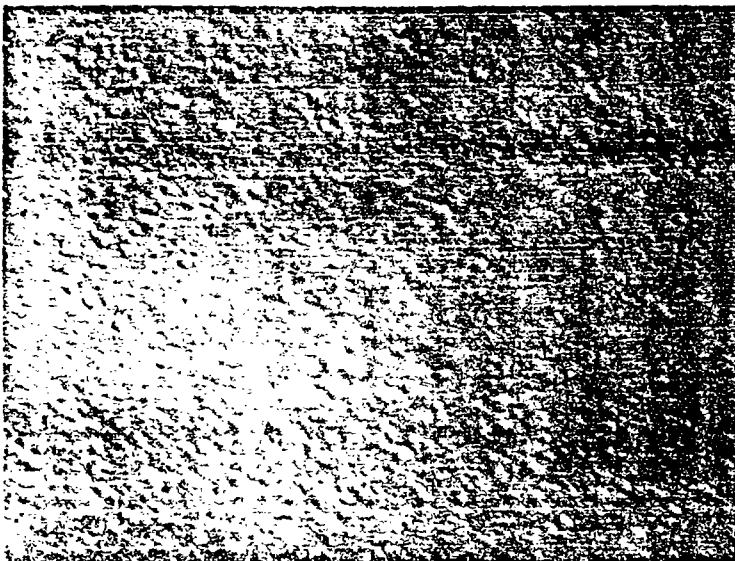
PLAIN TEXTURE (No Aggregate)



Roller Stipple Finish

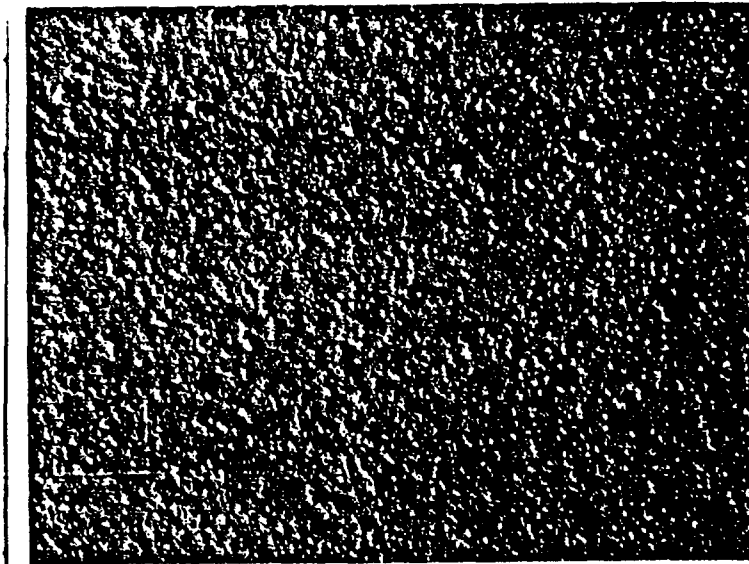


Brush Swirl Finish

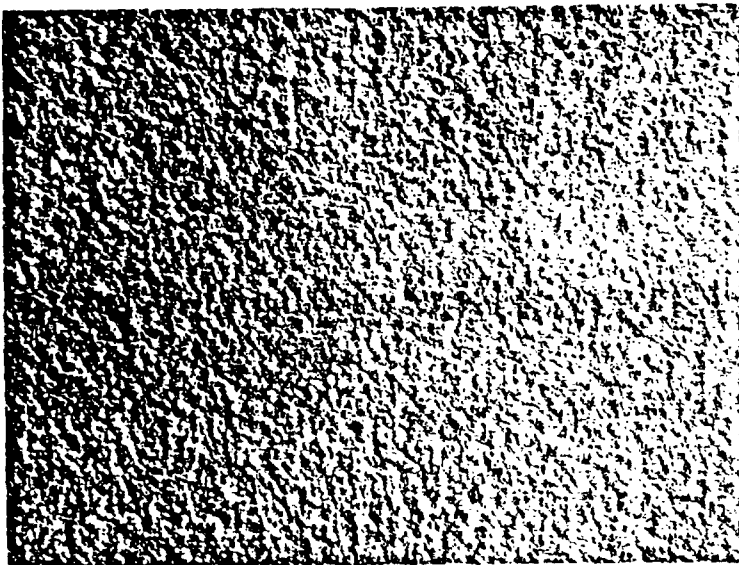


Spray Orange Peel Finish

AGGREGATED TEXTURES



Spray Application
Sand Finish



Spray Application
Simulated Acoustic

2. Ready Mix Joint Compound - R & D 211

Objective: To develop a ready mix or paste type joint compound to be competitive with other similar products on the market.

Investigation: A formula utilizing a dry binder was developed and field tested. The field reports were favorable. Even though the economics were not completely favorable, a small facility in Akron was approved to furnish the requirements of a large Detroit job. Unfortunately the contractor ultimately decided to use dry joint system on this job. As a result, only about 500 pails of ready mix were sold from Akron, whereas preparations had been made to furnish 3000 pails. We did not gain much from this limited experience, but it did tell us that there is very little potential for ready mix in the area served by the Akron plant.

The purpose of the dry binder as opposed to an emulsion binder was to eliminate the necessity for purchasing tanks, pumps, etc. to handle the emulsion. Other means have been found to purchase and handle emulsion which do not require the large investment for equipment formerly required. The emulsion formula offers a possible saving of 30¢ per pail. Costs using this formula have been worked out, and the economic picture is improved but still is not too favorable. Some of the poorest areas economically (Atlanta, Chicago, and West Coast) have the best potential market-wise, according to field surveys. On the other hand, the best areas economically (Akron and Acme) are the poorest market-wise. However, every year ready mix makes more impact on the joint system market and becomes more of a competitive factor. This competition is important insofar as joint system sales are concerned, but even more important is its influence on board sales. The future course of this project is undecided at present, but it is felt that it will be only a question of time before we are forced to meet this competition.

3. Cooperative Tests on Hof-Kor Honeycomb Panels - R & D 257

Objective: To test a partition of Hof-Kor prefab panels consisting of a paper honeycomb core faced with 5/8" Firestop Eternawall to achieve one hour rating. Union Bag-Camp Corporation, the manufacturer of the honeycomb, is sharing in the cost of this test.

Investigation: On the second try, the fire endurance test was passed. However, two hose stream tests have failed due to inability of the fasteners to hold the board in place. The probable cause are: the small heads of the Kolorpin fasteners, and the trapping of moisture in the board core by the vinyl facing, and the limit number of fasteners. Larger headed Kolorpin fasteners have been located, but it has not yet been determined whether there is sufficient interest to make another try to pass the hose stream test. The Sales Department is to advise us of their further interest.

PAOLI LABORATORY
RESEARCH AND DEVELOPMENT REPORT
PERIOD OF JANUARY 1963 THROUGH JUNE 1963
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FORWARD

This report covers the activities and accomplishments of our research program for the past six months. No basic changes in organization have occurred during this time. We have, however, begun to assign projects to a single individual rather than dividing the responsibility between two people. The former approach was being utilized until such time as the new men had gained sufficient experience and had become familiar with our procedures. At least one priority project has been assigned to each man as well as other projects of lesser priority. Each man is responsible for maintaining progress in his assigned projects. Assistance is provided where necessary by contacting the group leader.

A budget was put into effect in January 1963 in order to make available a record of the total expenditure for R&D and the amount spent for each project. The budgeted versus actual expenditures are being reported quarterly. These will be studied to determine whether our emphasis is being placed in the proper areas and whether our money is being spent wisely. This year's figures should give us a good basis for preparing next year's budget.

The field testing stage of our development programs was revamped during the past 6 months. There have been a number of instances where we have gained little or no information from trials. Another problem has been the difficulty we have had in obtaining field tests. We have brought this problem to the attention of the Sales Department and solicited their cooperation in planning a more effective field testing program. After several discussions, it has been decided to institute a standard procedure for requesting, conducting and reporting results of field trials. To simplify the reporting, a standard report form and follow-up form have been prepared. We trust that these measures will enable our field testing to be conducted more efficiently in the future.

Included in this report are the market performance of products developed through research, patent information, and some pictures illustrating the effect of glass fibers in gypsum. The latter are to be used in promotional literature. The major portion of the report is, of course, devoted to the progress of the various projects.

MARKET PERFORMANCE OF NEW PRODUCTS

JANUARY THROUGH JUNE 1963

1. FIRESTOP 120 CEILING TILE

Amount Sold	--	122,000 sq. feet
Dollar Sales Volume	--	\$16,215
*Gross Profit	--	\$ 5,349

2. GRABIT MASONRY ADHESIVE

Amount Sold	--	9 Tons
Dollar Sales Volume	--	\$ 1,739
*Gross Profit	--	\$ 1,019

3. ONE DAY JOINT COMPOUND

Amount Sold	--	634 Tons
Dollar Sales Volume	--	\$113,953
*Gross Profit	--	\$ 33,063

Total Sales Volume of New Products -- \$131,907

Total Gross Profit of New Products -- \$ 39,431

*Estimated by Ardmore Cost Department

PATENT INFORMATION

Patents Issued: None

Patents Applied For: Method of Processing Synthetic Gypsum

Patent Applications Being Prepared: One Day Joint Compound
Grabit Masonry Adhesive

PROJECTS NEARING COMPLETION

1. Thincoat Plaster - R & D 219

Objective: To develop a competitive thincoat lath and plaster system.

Status of Investigation: The original objective was to have one product for both smooth and textured surfaces. Such a product was developed and field trials were commenced. It became apparent during our field testing that smooth finishing properties were more important and textured finishes appealed only in certain markets. In view of this a second formula was developed in which the texturing properties were sacrificed in order to improve the smooth finish application. This product was found to be much more acceptable for those who desired a smooth surface. The former product will be retained for use where textured surfaces are desired. A number of successful field trials have been completed and we have recommended that both products be released for sale in limited markets. Our thincoat plasters have certain advantages over other thincoat products, and can be priced competitively while still maintaining a favorable profit margin.

Paralleling the thincoat plaster development were our efforts to impart the proper suction characteristic to our T. C. pinholath. This has been resolved to the point where all plants are capable of producing a satisfactory lath to be used with our thincoat plaster. Advertising photographs taken during one of our field trials are included in this report.

2. Ready Mix Joint Compound - R & D 211

Objective: To develop a ready mixed or paste type joint compound to be competitive with other similar products on the market.

Status of Investigation: Several field trials of a product containing a dry binder system have been conducted. Other than a few adverse comments on workability, the performance of the product has been satisfactory. On the basis of the trials, we received orders for 1500 pails of the product. The economics of our ready mix are still not completely favorable, and we are striving to improve this situation. We are somewhat limited in this direction because the fixed costs of the container and the freight represent a large percentage of the cost of the product. This leaves the formula and the processing for us to work on. We are even limited here as the improvement in both of these areas is limited since certain possibilities for cost reduction will require large initial expenditures for equipment. Judging from the emphasis Sales has given this project, it appears imperative that we continue to seek a practical solution to the problem. Our present thinking is that if we could install a small operation with minimum expenditure, it would enable us to effectively assess the market potential as well as possible cost savings. This would require that Management approve a low profit item, even if only on a temporary basis. Based on this experience, the market potential would then dictate the wisdom in considering certain equipment expenditures necessary to improve the profit margin.

PROJECTS NEARING COMPLETION

3. Glass Fiber for Wallboard Reinforcement - R & D 210

Objective: To be able to approve several types of glass fiber, particularly 799 (Muzzy Mix) for use in our wallboard.

Status of Investigation: From this evaluation of fiber types we found that types 710, 804, and 799 all were better than the 863 we were using because of improved dispersion characteristics, and that 799 was a special improvement because it offers greater reinforcing value per lb. of fiber. This evaluation has progressed to the point where all of the glass fiber used in our board is either 710 or 799. This work then became intermeshed with an investigation being conducted by the Manufacturing and Process and Control Departments to evaluate the effect of paper fiber. It was found that the regular amount of 799 glass fiber was equivalent to the standard amounts of paper fiber and 863 glass fiber. Some trial runs were made at Wilmington, but due to cutting problems with 799 fiber, an increased amount of 710 fiber was used and the paper fiber eliminated. Doing away with the paper fiber appears to permit machine speed increases on the order of 10% without changing the characteristics of the board. This will be carried further at other plants. In the meantime, 799 glass fiber is still a superior fiber and we are continuing with our effort to enable all plants to use it. Improved quality or further cost savings, or both, are inevitable through the use of the 799 binder glass fiber.

4. One Day Texture Problem - R & D 243

Objective: To find a means of eliminating the need for a primer over One Day Joint Compound prior to texture application.

Status of Investigation: The sale of One Day has been limited because we have had to recommend a primer prior to any joint system texture application. National Gypsum has issued a similar precaution because of the same drawback to their setting type joint system. Two approaches have been studied. The first is to develop a texture which will do its own priming, and the second is to develop a topping which will alleviate the necessity for priming regardless of the texture used. After considerable experimentation, a texture has been found which we believe will eliminate the need for the primer. The development of a topping for use over One Day has not been completed as yet. We are proceeding with field trials of the texture as quickly as possible, since we feel this will greatly enhance the sale of One Day Joint Compound.

5. Accumulation of Fire and Sound Test Data - R & D 249

Objective: To gather all available fire and sound test data on the various constructions and put it into a usable reference form.