1936 EDITION

THE Gold Bond HANDBOOK

ON INSULATION PRODUCTS FOR THERMAL INSULATION AND SOUND CONTROL

NATIONAL GYPSUM CO.—GENERAL OFFICES, BUFFALO, NEW YORK

THE Gold Bond HANDBOOK

ON INSULATION PRODUCTS FOR THERMAL INSULATION AND SOUND CONTROL

Manufactured and sold by National Gypsum Company through 7000 dealers in 37 states east of the Rocky Mountains, offering a complete service in products controlled and guaranteed by one company.

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NATIONAL GYPSUM COMPANY—GENERAL OFFICES, BUFFALO, N. Y.

Location of Plants:
National City, Mich.
Camden, New Jersey
Akron, N. Y.
Niles, Ohio
York, Penn.
Luckey, Ohio
Oranda, Va.
Rotan, Texas
Clarence Center, N. Y.
Fort Dodge, Iowa
Lime City, Texas

ALUMINUM FOIL INSULATION BOARD AND LATH

Presenting the newest and most effective principle: Reflective Insulation—in combination with rigid, fireproof Gold Bond Gypsum Lath and full length Gypsum Wallboard. The ideal insulation. Saves one-third or more in cost.

SCIENTISTS have recently discovered the practical application of the principle that *heat waves, like light waves, are reflected by a polished metal surface.* So effective is this new type of insulation, that already it has been adopted by the United States Navy, leading railroads, and manufacturers of refrigeration equipment. Many foremost architects and building experts stand ready to vouch for its superiority over previous types of insulation.

Increased Year-Round Comfort

During severe hot weather, aluminum foil insulation has proved its ability to keep inside temperatures 10 to 20 degrees or more below outside. While during the average heating season it may be counted upon to save from $40 to $100 in fuel bills for the owner of the average size house. Yet aluminum foil insulation costs considerably less than other types.

One of its most striking features to the man accustomed to the weight and bulk of ordinary insulating materials, is the almost total absence of weight in aluminum foil. For instance, on the U. S. S. New Orleans less than 2000 pounds of aluminum foil was used instead of more than 100,000 pounds of bulky insulation. The ocean liners Rex and Comte di Savoi carry only 1/60th the normal insulating weight because of aluminum foil. While new streamlined, air-conditioned trains, refrigerator cars and trucks are insulated more effectively and permanently, with a welcome saving in space and weight, through aluminum foil.

A Combined Plaster Base and Insulation

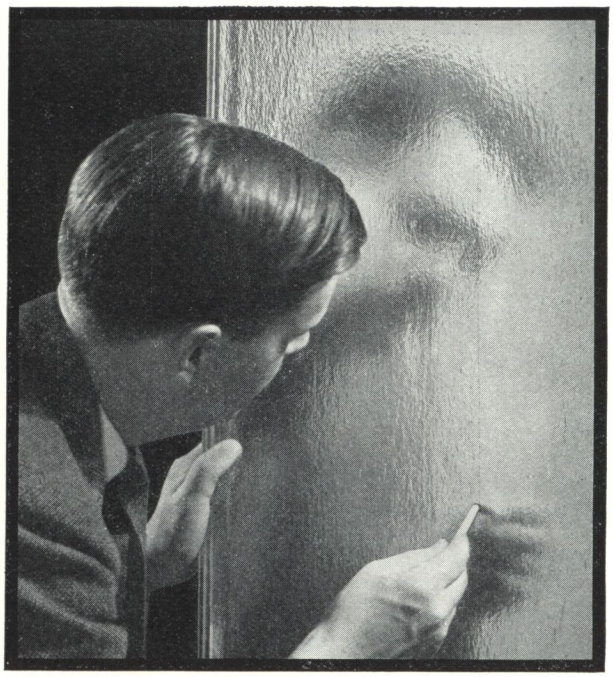
Gold Bond Aluminum Foil Insulation Lath is standard Gold Bond Gypsum Lath, on one side of which is laminated a mirror-like sheet of pure polished aluminum. Insulation and plaster base are combined into a thoroughly practical, fireproof, easily erected product. This double purpose lath costs but little more than ordinary gypsum lath. An additional saving is made in application where the only operation is nailing up the lath.

Gold Bond Aluminum Foil Insulation Board, full size panels of sturdy, fire-proof gypsum board with foil firmly laminated on one side, brings two savings—(1) in first cost, (2) in application.

Insulation Values

Numerous tests have shown the remarkable effectiveness of this new type of insulation. It is based on the principle that a polished metal surface—in this case polished aluminum selected because of its ability to withstand corrosion—will reflect 95% of all radiant heat. It blocks heat entry in summer—stops heat loss in winter.

At this point it is well to remember that the only active agent involved in insulation is *heat energy.* As heat energy, like water, always seeks a level or balance, heat energy is passed from the warmer to the colder body.



Mirrored Surface Reflects Heat Waves

A combined plaster base and insulating lath, erected in one operation at a considerable saving. Approximately 21% more efficient than standard insulating board under like conditions.

In house construction in Summer, heat energy from outside passes into the cooler interior of the house. The amount of heat flow of course, depending upon degree of insulation. In Winter, the warmer furnace heat inside the house passes outward to the colder air. Here again heat loss depends upon amount of insulation.

Approximately 75% of all heat traveling through walls and ceilings of buildings is radiant heat, or heat waves. This is distinguished from convected heat, or moving hot air, and conducted heat, or heat energy moving along a solid or liquid body.

It is the passage in or out of this radiant heat which is 95% stopped by Gold Bond Aluminum Foil Lath and Wallboard.

Comparative tests on Aluminum Foil Board and Lath show this material to be approximately 21% more effective than standard insulating board when employed in identical wall construction.

Test Data

MATERIAL	Conductivity or Conductance	Resistivity or Resistance	AUTHORITY
½" Rigid Fibre Board	0.66	1.52	A.I.A. File 37 Table V
½" Flexible Blanket	0.54	1.85	"
⅜" Plaster Board	3.73	0.27	"
¾" Metal lath and plaster	4.40	0.23	"
⅜" PLASTER BOARD plus FOIL (over ¾" air space)	0.41	2.44	"
Over ¾" air space faced one side with aluminum foil	0.46	2.17	
(Above values based on thickness as stated and based on "Thermal Insulation of Buildings"—AIA File 37)			
Wall Section with Fibre Insulation Board (temp. difference 70-72° F.)	.379	2.64	A.D. Little Inc.
Same section as above with Gold Bond "Reflectal" Insulation Board	.298	3.36	"

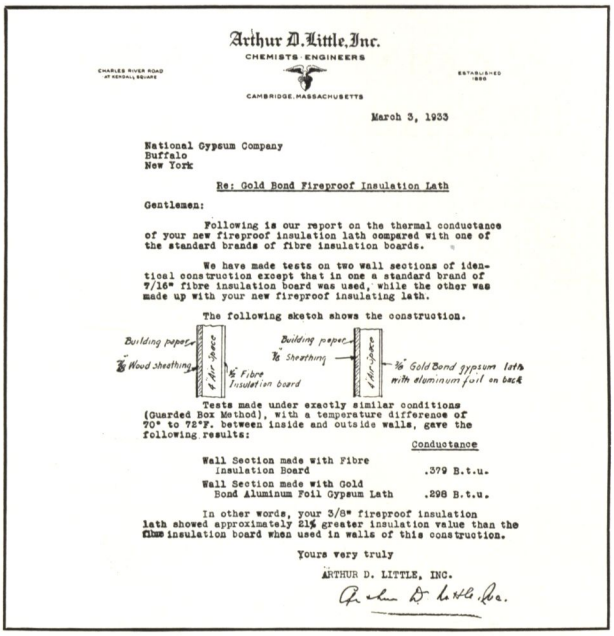
"Plus Values" of Gold Bond Aluminum Foil Insulation Lath and Wallboard

Structural Characteristics—Gold Bond Aluminum Foil Lath and full length board have all the well known structural characteristics of patented Gold Bond Gypsum Wallboard—including exceptional strength, lightness and ease of handling.

Fireproof Characteristics—The fire hazard of most types of ordinary insulation is completely avoided. It is made of pure gypsum—as fireproof as rock itself.

Moisture Resistance—An especially important feature is absolute freedom from warping, buckling and cracking—common enough occurences in fibre insulating lath and board.

Permanence—The solidity and permanence of Gold Bond Gypsum Lath and Board has long ago been amply proved. Recent strenuous tests and others taken over a period of years, fail to show any decline of efficiency with age in aluminum foil. This is explained by the fact that a reflective oxide coating forms on aluminum, in no way detracting from the insulating effect, but preventing corrosion even in the vicinity of large steel mills where the air is loaded with corrosive sulphur fumes.



Arthur D. Little, Inc.
CHEMISTS · ENGINEERS
CAMBRIDGE, MASSACHUSETTS

March 3, 1933

National Gypsum Company
Buffalo
New York

Re: Gold Bond Fireproof Insulation Lath

Gentlemen:

Following is our report on the thermal conductance of your new fireproof insulation lath compared with one of the standard brands of fibre insulation boards.

We have made tests on two wall sections of identical construction except that in one a standard brand of 7/16" fibre insulation board was used, while the other was made up with your new fireproof insulating lath.

The following sketch shows the construction.

Tests made under exactly similar conditions (Guarded Box Method), with a temperature difference of 70° to 72°F. between inside and outside walls, gave the following results:

	Conductance
Wall Section made with Fibre Insulation Board	.379 B.t.u.
Wall Section made with Gold Bond Aluminum Foil Gypsum Lath	.298 B.t.u.

In other words, your 3/8" fireproof insulation lath showed approximately 21% greater insulation value than the fibre insulation board when used in walls of this construction.

Yours very truly

ARTHUR D. LITTLE, INC.

Rigidity—Properly applied, Gold Bond Aluminum Foil Insulating Lath and Board insure a rigid wall of great structural strength.

Plaster Base—The patented indented surface found only on Gold Bond Gypsum Lath is the perfect plaster base, providing suction necessary for ideal application conditions.

Application: Lath and Wallboard

Gold Bond Aluminum Foil Insulation Lath and Wallboard are applied with metal side against framing members. Space between studs and joists is essential. Do not apply direct to another flat surface.

Sizes and Thicknesses

GOLD BOND ALUMINUM FOIL INSULATION LATH	
¼ and ⅜ inch thick	16 x 32, 16 x 48 and 32 x 36 inches

GOLD BOND ALUMINUM FOIL INSULATION BOARD		
Thickness	Width	Length
¼, ⅜, ½ in.	32 and 48 in.	4, 5, 6, 7, 8, 9, 10, 11 and 12 feet
½ in. Square Edge	36 in.	8, 9 and 10 feet
½ in. T & G Edge	36 and 48 in.	8, 9 and 10 feet

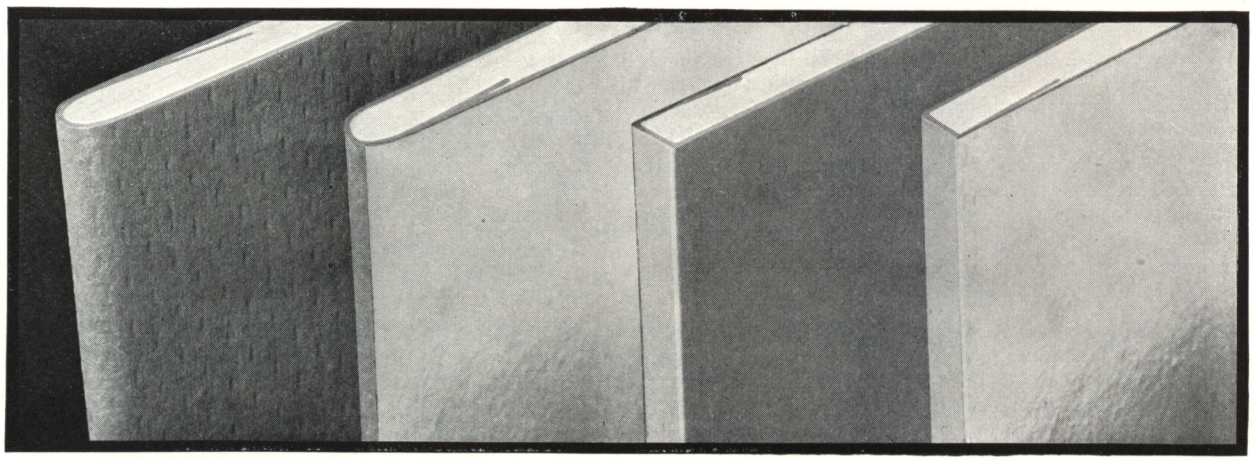


Illustration Showing the Front and Aluminum Foil-Covered Back of the Gold Bond Aluminum Foil Insulation Lath and Wall Board

GOLD BOND FIBRE INSULATION PRODUCTS
STRUCTRAL BOARD · · · LATH · · · TILE · · · ROOF BOARDS

Made from tough, wiry, licorice root fibres, these products are recognized as the strongest avilable

GOLD BOND Insulation Products are made from the long tough fibres of the roots of the licorice plant. The natural tough structure of the roots develops great structural strength and a high thermal and acoustical resistance, due to the millions of microscopic dead air cells contained in their structure. The improved method of manufacturing the board develops its special advantages to the highest degree.

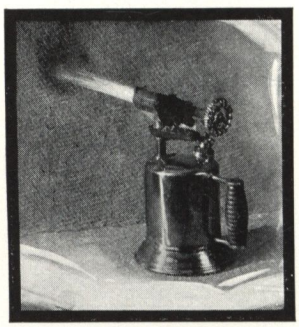
Insulating Value

The thermal conductivity has been determined by Professor Sloan of the University of Pennsylvania and Professor Gebhardt of the Armour Institute to be 0.34 B.T.U. per square foot per hour per inch thickness per degree Fahrenheit difference in temperature between opposite sides. Average tests at U. S. Bureau of Standards give it a rating of 0.339.

Structural Strength

Numerous comparative distortion tests between walls sheathed with Gold Bond Insulation Board and standard wood sheathing show that under very severe stresses the distortion of Gold Bond Insulating Board is less than one-fifth as great as that sheathed with wood. In the tests also, the structures covered with Gold Bond Insulation Board were sufficiently resilient to return to their original position upon release of the stress. Its tensile strength averages 325 lbs. per sq. in. and its weight is approximately 19 lbs. per cu. ft.

Fire Resisting Qualities

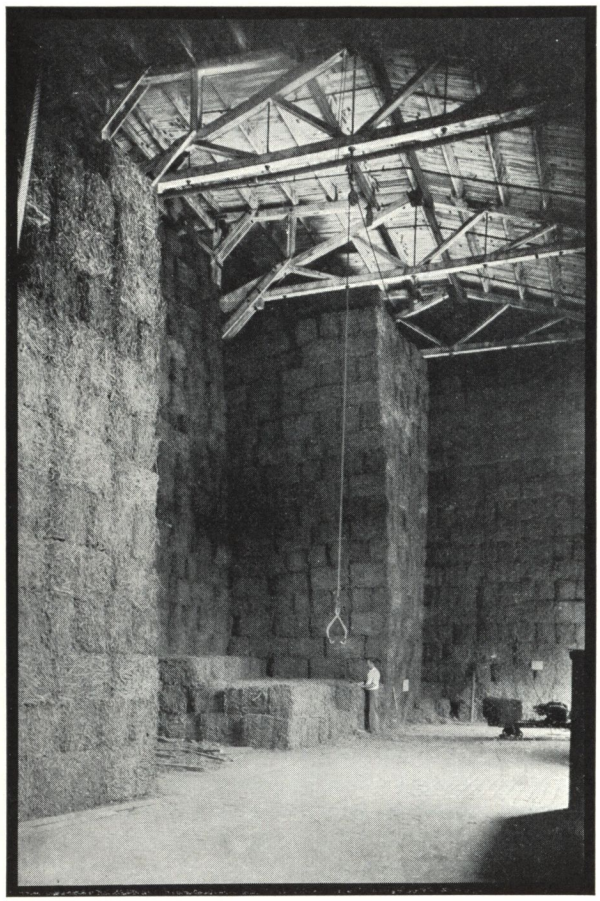


While the board is not fireproof, it has a resistance to fire. Tests were made with a blow torch flame on Gold Bond and two other boards used for a similar purpose. Board "X" burned through in 2 minutes, charring an area of 300 sq. in. Board "Y" burned through in 3 minutes, charring an area of 200 sq. in. *Gold Bond required 4 minutes for the flame to penetrate and charred only 64 sq. in. of the board.*

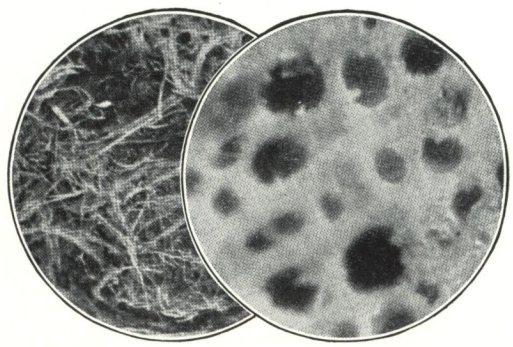
Its Moisture Resisting Quality

Because the licorice fibres are waterproofed during the processing of the fibre into the board, there is little danger of its warping under ordinary building conditions.

In laboratory tests, Gold Bond Structural Insulation Board was immersed in water for 24 hours. At the end of that period it had absorbed only 29.7% of its weight. Two other boards for a similar purpose were also tested. Board "X" absorbed 53% of its weight and Board "Y" absorbed 42% of its weight in the same time.



Licorice Root at Camden, N. J. Insulation Plant.



Microphoto Showing (Left) Sterile Root Fibres Which Give Gold Bond Its Tremendous Strength; (Right) Section of Gold Bond Showing Tiny Dead Air Pockets.

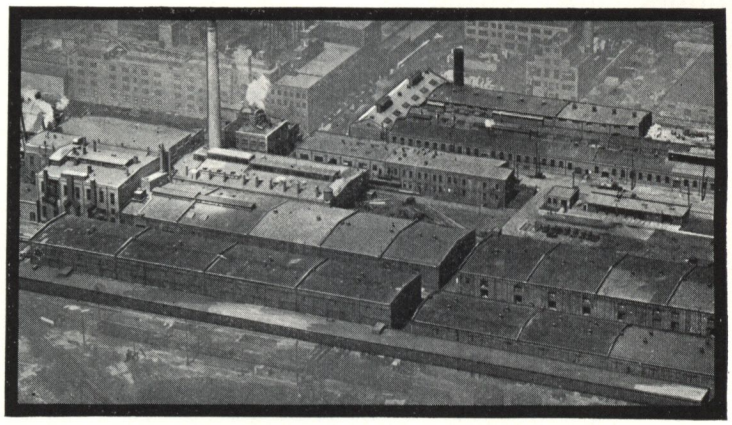
Is Vermin Resistant and Unaffected by Age

Licorice roots are inherently resistant to vermin and bacteria. This natural characteristic is further enhanced by complete sterilization and chemical treatment of the fibres and no case has ever been reported where insects or vermin have attacked the board. Installations made over 25 years ago show absolutely no deterioration as to brittleness or loss of strength.

GOLD BOND STRUCTURAL INSULATION BOARD FOR WALL AND CEILING TREATMENT

DURING the past few years Gold Bond Insulation Board has become one of the leading wall and ceiling materials. And the reason for this popularity can easily be appreciated when one considers the extra advantages that Gold Bond offers—First, a distinctive interior finish; Second, efficient insulation against heat and cold; Third, a sound absorbtive material that quiets noise.

Gold Bond Insulation Board is used for both new and modernizing work. The large, sturdy panels are nailed directly to the studding, or applied right over the present material, building attractive, crack proof interiors that are unsurpassed for beauty, practicability and economy. Bevelling tools may be employed to produce ornate, modern designs that can be made just as extreme as desired.



Plant at Camden, N. J., Where Gold Bond Insulation Board and Lath Are Made

Decoration

Gold Bond may be left in the natural color—a warm tan-tone or may be finished with oil or cold water paints. The illustration at the bottom of the page shows a two-tone textured glazed finish that may be obtained very economically and with a minimum of effort because the surface of Gold Bond is already textured as it comes from the factory.

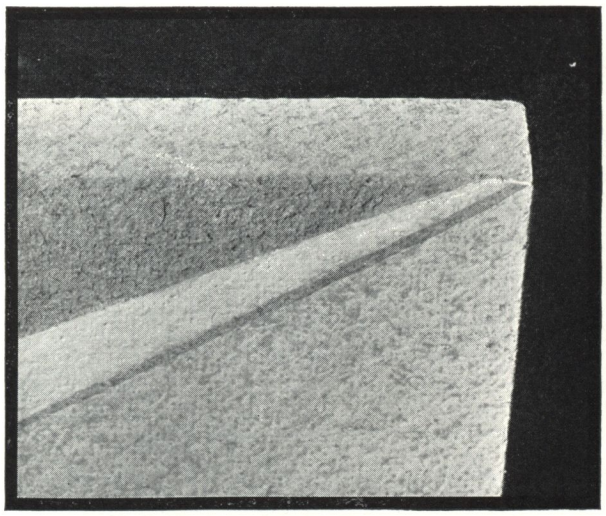
Sizes and Thicknesses

48 inches wide and 6, 7, 8, 8½, 9, 9½, 10 and 12 feet long. Standard thickness ½ inch (also made 1 inch thick).

Treating the Intersections

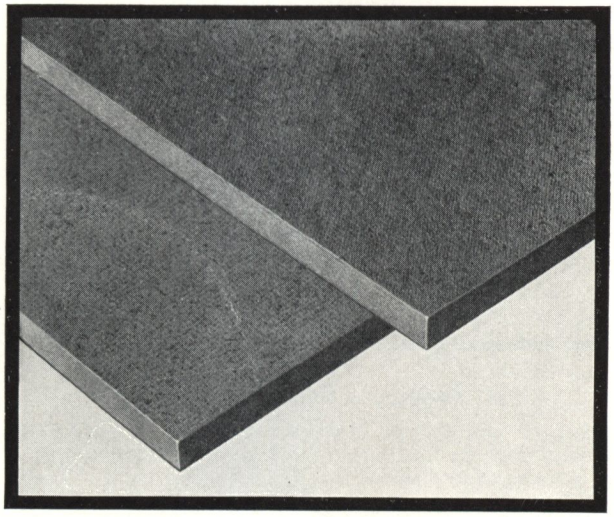
The edges of the panels are often bevelled (on the job) and the joints left unfinished. However, the customary treatment is to cover the intersections with wood decorative battens. The new metal strips are also very popular.

For economy's sake, strips, sawed from panels of Gold Bond Insulation Board, are sometimes used over the joints. The latter treatment can be made very attractive if the strips are grooved or bevelled.



This Full Size Illustration Shows Steps in Producing a Glazed Finish on Structural Insulation Board for Interior Finish

At top is plain board; center, one coat of white paint; lower, glazed and stippled finish.



Either Side of Gold Bond Insulation Board May Be Used as Each Surface Has a Distinctive Texture Design

The reverse side is shown to the left and the face side (with finer texture) to right.

GOLD BOND STRUCTRAL INSULATION BOARD FOR THERMAL INSULATION OF WALLS AND ROOFS

Exterior Wall and Roof Sheathing

The use of Gold Bond Structural Insulation Board on the exterior of a frame building greatly stiffens the frame and insulates as well. It is used in place of wood sheathing under wood shingles, siding, stucco, and brick veneer. On account of the large area of the boards and joints coming on studs or headers, it makes a tight wall, and air leaks are reduced to a minimum as well as the transmission of heat through the walls.

Since one of the greatest sources of heat losses is through the roof, the use of the Insulation Board is highly recommended for use on all types of sloping roofs applied directly to the rafters. Shingles, slate, etc., are applied to furring strips laid over the insulation.

With Gold Bond Structural Insulation Board for the exterior walls and Gold Bond Insulation Roof Boards across the top, a solid barrier of insulation is built around the house. Actual tests prove that a saving of 20 to 30 per cent in fuel is effected during the heating season. In Summer, the entire house is decidedly cooler, particularly the rooms on the second floor.

Sizes and Thicknesses

Gold Bond Structural Insulation Board—Standard thickness, ½ inch. (Also made 1 inch thick.) Sizes: 48 inches wide and 6, 7, 8, 8½, 9, 9½, 10 and 12 feet long.

Gold Bond Insulation Roof Boards—Standard size, 2 x 5 feet x ½ inch thick. (Also 1, 1½ and 2-inch thicknesses.)

GOLD BOND INSULATION TILE

Quiets Noise . . . Decorates . . . Insulates

Gold Bond Insulation Tile is the ideal wall and ceiling material for Stores, Offices, Theatres, Corridors, etc.; in fact, for every type of room or building where modern, decorative treatments are desired plus the extra advantages of insulation and sound correction. The coefficient of sound absorption is .30 at a frequency of 512 cycles.

Used Extensively for Modernizing

Applied right over present material

Old Stores, Restaurants, or other buildings can be quickly transformed into modern, inviting interiors with Gold Bond Insulation Tile. When a busy store is to be remodelled, speed is of utmost importance so that business won't be held up. Very often, stores are refinished with Gold Bond over-night, the sturdy Tiles being nailed or cemented directly over the old material. Besides offering the last word in decorative treatments, Gold Bond insulates against heat and cold, and in addition, provides effective sound absorption so much desired for almost all types of buildings.

Color and Decoration

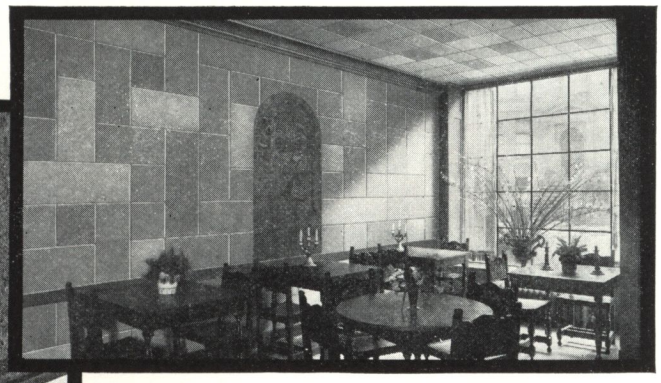
Gold Bond Insulation Tile is of the same color as Gold Bond Insulation Board—a warm tan tone. It is often left in the natural color, which won't oxidize or darken, or it can be decorated with oil or cold water paint. The latter decoration is particularly recommended as it won't seal the surface and causes only a slight reduction in sound absorption.

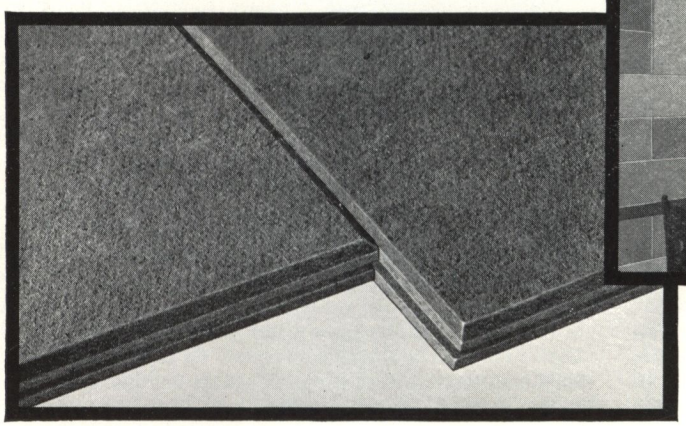
Sizes and Thicknesses

Gold Bond Insulation Tile is ½ inch thick and supplied in sizes that permit of unlimited, interesting patterns.

Small Sizes		Large Sizes	
6x 6 in.	6x12 in.	16x32 in.	16x48 in.
8x 8 in.	8x16 in.	18x32 in.	18x48 in.
12x12 in.	12x24 in.	24x32 in.	24x48 in.
16x16 in.	24x24 in.		

All sizes packed 15 panels to the bundle.





At Left:

The Four Edges of Gold Bond Insulation Tile Are Beveled

Ship-lap edge on all sides makes a snug joint that is dustproof and prevents the passage of heat and cold

SPECIFICATIONS FOR APPLYING GOLD BOND STRUCTURAL INSULATING BOARD

FOR EXTERIOR SHEATHING OF WALLS AND ROOFS

Scope—All exterior frame walls and sloped roof surfaces, unless otherwise noted, shall be sheathed with Gold Bond Structural Insulating Board. (Note here—exceptions to the above.)

Materials—Insulating Board shall be Gold Bond Structural Insulating Board of National Gypsum Company, Buffalo, N. Y. Board shall be ½ in. thick by 4 ft. wide and lengths as required. Roof Insulating Board may be ½ in. thick and in 22 in. x 47 in. or 24 in. x 48 in. sheets if desired.

Framing—All studs, sills, plates, joists and roof rafters, etc. shall be framed in the usual manner. Studs, joists and rafters shall be accurately spaced 16 in. on center. Use 2 x 4 headers cut between studs for nailing where horizontal joints in the boards occur and where necessary for all end joints.

Application—The Insulating Board shall be applied with the long side parallel to the studs for the walls and at right angles to the rafters on the roof. All ends and edges shall have solid bearings. The board shall start at the bottom of the sill and continue to the underside of the roof sheathing, making a tight joint.

Always allow ¼ in. between ends and edges of the board and never force them together, except where a tight joint is desirable. With other materials, as at door and window frames, eaves and similar locations, the Insulating Board shall be brought into close contact.

Nailing—Boards shall be nailed with 1½ in. large headed, galvanized roofing nails. Begin at intermediate studs, rafters or furring strips, nailing every 6 in. apart. Follow by nailing the top edge, bottom edge and lastly the side edges. Nails shall be placed 4 in. apart and ⅜ in. back from the edges and driven until the nail head is slightly below the surface. On sloping roofs, no headers are required at the cross joints, as the stripping for the roofing material may occur over the joints, thus closing them. When the stripping does not cover the joints, an extra strip shall be inserted for this purpose.

Where it is desirable to apply the insulation board as supplemental to sheathing or roofing boards, it will only be necessary to use 1 in. nails, sparsely driven (starting at the center of the board) to hold the boards in place until the side wall or roofing material is applied.

Furring Strips—Where shingles, slate, etc. are to be applied to the roof, the roof shall be furred with shingle lath, properly spaced and the nails shall be ½ in. longer than ordinarily used so as to nail through the Insulating Board to the rafters.

FOR INTERIOR FINISH

Scope—The interior of walls, partitions and ceilings (except where noted) shall be covered with Gold Bond Structural Insulating Board.

Materials—Insulating Board shall be Gold Bond Structural Insulating Board of National Gypsum Company, Buffalo, New York. Battens shall be wood batten (describe size, thickness.)

Framing—All studs, sills and plaster shall be framed in usual wood frame construction. All studs shall be accurately spaced 16 in. on center. Use 2 x 4 in. headers cut between studs for nailings where horizontal joints in boards occur and for chair rails, base and similar trim. Extra studs shall be used for nailing where necessary to carry out the paneling design desired.

Application—The Insulating Board shall be applied with the long sides parallel to the studs and at right angles to roof, beams, etc., allowing ample bearing for nailing on all edges. Boards shall be applied in single sheets from floor to ceiling on walls and partitions and in full width panels on the ceilings wherever possible. Horizontal joints shall be made only over framed headers. Boards shall be kept apart ¼ in. on sides and ends. Boards must not be forced into place.

About 24 hours before applying Gold Bond Insulating Board it shall be slightly dampened, using about a pint of water on each side of a 4/8 ft. board.

Nailing—Boards shall be nailed first to intermediate studs with 1½ in. finishing nails, spaced 6 in. apart and driven at a 30° angle. Heads of nails shall be countersunk with nail set. Follow by nailing the top edge, bottom edge and lastly the side edges. Where joints are to be covered by battens, the edges of the boards may be nailed with 4 d box nails or 1½ in. large head galvanized roofer's nails. They should be spaced 3 to 4 in. apart, ⅜ in. back from the edge and driven until the nail head is slightly below the surface.

Battens—Trim—Joints shall be covered with (state kind) wood battens (specify width and thickness), (also specify other trim). The battens shall be nailed to the studs through the Insulating Board using 2¼ in. finishing nails driven at an angle.

Note: (If the battens are of wood the nails should be set and holes filled with putty before painting.)

Decorating—*Painting*—Ordinary lead and oil paints may be applied satisfactorily without sizing or priming, but it is more economical in paint to size the wall. Two coat work is advised for most effective results. A very pleasing effect is obtained by applying one coat of thin white paint. Then apply coat of Gold Bond Glaze tinted as desired and stipple with soft cloth.

Staining—Staining with ordinary commercial stains will prove satisfactory if the manufacturer's directions are followed.

Calsomining—When using calsomine, the surface must first be sized or glue size must be added to the calsomine. Follow manufacturer's direction.

Gold Bond Color Textures—This one coat color texture finish may be applied over a sizing coat or without sizing. By its use the color and texture are applied at one operation. Finish does not require glazing. *Caution:* All joints or intersections must be covered with panel strips. See "Specific Application Data" for Color Texture. (Refer to File Index.)

Multitone Glazing—The effect of a high grade texture finish can be obtained easily by a thorough base coat of flat white paint to completely seal the surface and give a white background. This is followed by applying a standard oil glaze colored as desired and stippling with cloth to produce multi-tone effects of texture glazing.

GOLD BOND INSULATING LATH

Made of tough licorice root fibres, the lath is chemically treated by a patented process which accelerates the set of plaster

GOLD BOND Insulating Lath is made of the tough fibres of licorice roots in the same manner as that used in the Gold Bond Insulating Board. The only difference is in the size of the lath. This comes in sheets 18 x 48 inches, tongue and groove, and ½ inch thick.

A Practical Plastering Base with High Insulating Qualities

Through many tests, the rippled surface of Gold Bond Insulating Lath has been demonstrated as a most efficient base for plastering. Made in exactly the same manner as Gold Bond Insulating Board, it possesses all the fine qualities of that board. It is strong, resilient, and highly moisture resisting, and reinforces the framing. It has an insulating value of 0.34 B.T.U. value per inch of thickness.

Its Plaster Bonding Qualities

The felted fibrous roots offer an ideal surface for application and penetration of gypsum plaster. The adhesive qualities of gypsum plaster depend on the penetration of the needle-like crystals of the gypsum into the surface of the board. It penetrates into the surface of the lath so well that the results of numerous tests have given it an average adhesion value of 1600 lbs. per square foot. Its adhesion, therefore, is greatly in excess of the requirements of 600 pounds per square foot required by the A. S. T. M. standard.

Exclusive Advantages

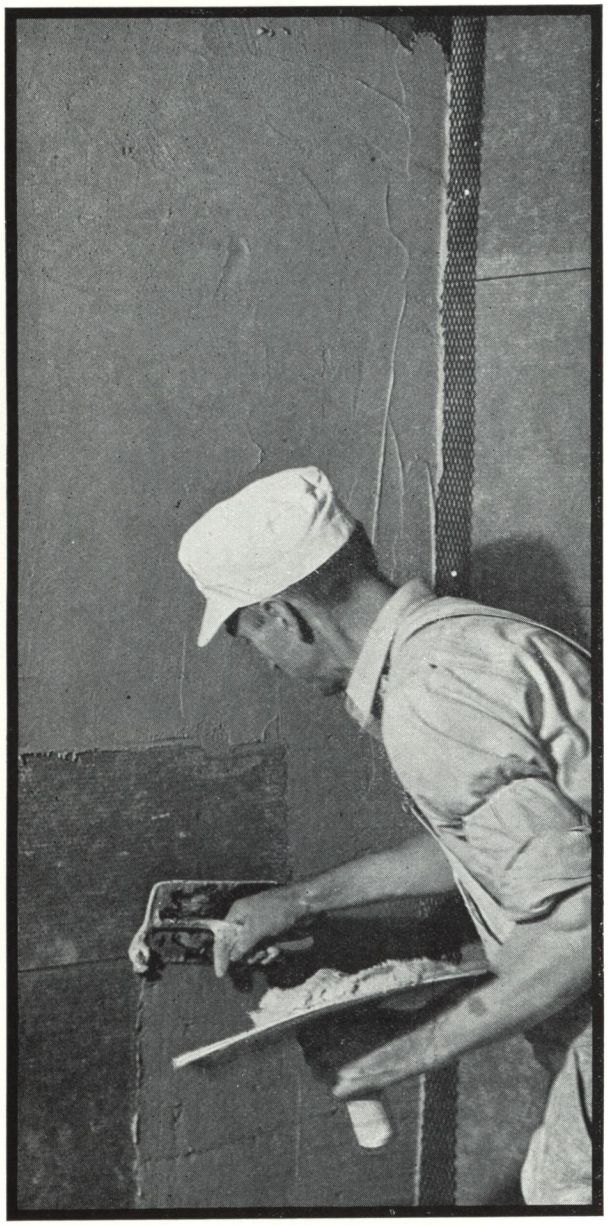
Gold Bond Insulating Lath has received a patented treatment which reduces the problems involved in the application of a wet plaster over a fibrous product such as insulation lath. This patented treatment involves the use of a chemical on the surface of the lath which accelerates the set of the plaster in contact with the surface and retards the movement of moisture into the lath which ordinarily tends to cause expansion, buckling, and cracking. This is in addition to the remarkably high resistance to moisture absorption inherent in the board.

Its Cost

The cost of Gold Bond Insulating Lath in the finished wall is only slightly more than that of ordinary wood lath and plaster, and considerably less than that of metal lath and plaster.

Its Application

Gold Bond Insulating Lath is applied with the rippled surface out and lengthwise across the studs. It is applied with tongue and groove edges in moderate contact (not forced together) and square ends on studs, spaced ¼ in. apart. It is nailed with 1⅛ in. nails with $\frac{5}{16}$ in. heads. The nails are spaced 4 in. apart, and nail head is driven below the surface. All end joints are staggered.



Gypsum Plaster is easily applied over the lath, requiring no forcing to obtain key.

Gold Bond Insulating Lath should *not* be wetted down before applying.

In all vertical re-entering angles, and in all angles between ceilings, soffits and walls, Gold Bond expanded metal lath of strips or Gold Bond Cornerite shall be nailed. It is recommended that 6 in. strips of expanded metal later be attached to continuous joints in ceilings.

GOLD BOND DRY FILL INSULATION

A Non-combustible Gypsum Insulation Product

For Insulating New and Old Homes

GOLD BOND DRY FILL INSULATION is composed chiefly of finely ground high grade gypsum and fibres. It is used dry between the ceiling joists and between the studs forming the exterior walls.

This barrier of insulation around the house provides additional comfort the year 'round and pays for itself many times over in the saving of fuel during the heating season. Keeps the entire home many degrees cooler in Summer and makes it easier to heat in Winter.

Its Advantages

1—An efficient insulation against heat, cold and sound.

2—It is an inert mineral product; absolutely fireproof.

3—Applied 3 to 4 in. thick, its cost is extremely low.

4—It weighs 18-20 lbs. per cu. ft.

5—Applied 3 in. thick, 100 sq. ft. of ceiling requires 420 lbs.

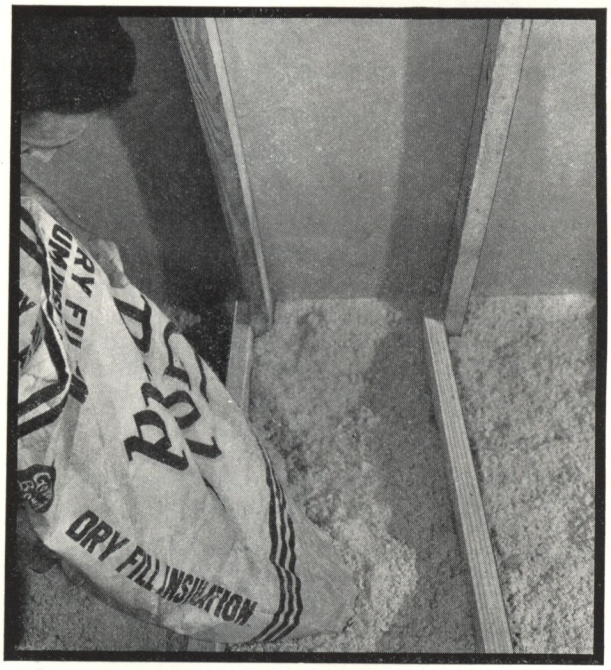
6—Easy to handle. Packed in 50-lb. bags.

7—Soaking will not injure the insulation after it dries out.

What It Is

Gold Bond Insulation is made from the same high grade gypsum as all other Gold Bond Products. Gypsum itself has good insulating qualities and these are increased by a special fluffing process. This process increases the number of tiny air cells which it naturally contains and by doing so the insulating value is increased.

The fluffing also increases the bulk, reduces its weight and minimizes any settling tendencies.



Gold Bond Dry Fill Insulation is poured between ceiling joists and exterior wall studs, building a blanket of insulation around the house.

Gold Bond Dry Fill has a coefficient of thermal conductivity comparable with that of fibre insulation board. When installed 3 to 4 in. thick, or 6 to 8 times the thickness of ½-in. thick insulation boards, it has a minimum of over 5 times their insulation value.

Its Application Over Ceilings

The Insulation is poured from the bags between the ceiling beams over the back of the lath. It is then leveled off to a depth of 3 in. but not packed and is then lightly sprinkled with water. This forms a slight crust which prevents the material from dusting.

For buildings already built, it is generally possible to apply the insulating over the second story by removing every fifth board of attic floor where a single floor is used. If attic space is not floored over, the insulating is simple.

SPECIFICATIONS FOR GOLD BOND DRY FILL INSULATION

Scope of Work

All outside walls and attic floor shall be insulated with Gold Bond Dry Fill Insulation.

Material

Insulating material shall be Gold Bond Dry Fill Insulation as manufactured by National Gypsum Company, Buffalo, N. Y. It shall be delivered to the job in manufacturer's original 50 lb. bags and shall be used directly from the bags.

Side Wall Insulation

The entire space between the plaster base or lath and the outside sheathing of all exterior frame walls shall be filled with Gold Bond Dry Fill Insulation from the sill to the underside of the roof plate.

The Insulation shall be left in its original fluffy state and not packed into position.

After the outside sheathing is in place and the walls to be insulated are receiving plaster base or lath, Gold Bond Insulation shall be poured into place in sections not over 48 in. in height at a time as the work of applying the plaster base or lath progresses.

Ceiling Insulation

If the second floor ceiling plaster lath has been applied the insulation shall be filled in between the joists to the depth of not less than 3 or more than 4 in. It shall then be lightly sprinkled to form a crust. If the ceiling is lathed with wood or metal lath, then the insulation shall not be filled in until after the plaster is thoroughly dry.

Note for Carpenter: If the attic is to be floored, the floor must not be laid until the Gold Bond Insulation has been filled between the joists.

SOUND ABSORBING MATERIALS

Their Uses and Values

Acquisition of the Macoustic Engineering Company's formulae and patents by National Gypsum enables them to offer the most complete line of acoustical plasters available

THERE are two distinct Gold Bond Acoustical Plasters—Standard Macoustic with its attractive textured finish and Smooth Finish Macoustic which may be smooth trowelled or floated.

Standard Macoustic, the original acoustical plaster, has been installed in thousands of buildings, including many of the beautiful new Post Offices, Court Houses and other Federal Buildings erected during the past year. The fact that Standard Macoustic was selected by architects time and again for use in buildings of this calibre is conclusive proof of the superior quality of this material.

Smooth Finish Macoustic is a brand new Gold Bond Product introduced by National Gypsum Company in October, 1935. This material was designed to meet requirements where a smooth trowelled or floated finish is desired. Both materials are described in detail on subsequent pages.

Types of Acoustical Materials

Acoustical materials may be classified in two distinct groups: acoustical tiles and acoustical plaster.

Because of its background in the entire plaster industry, the National Gypsum Company has specialized on acoustical plasters rather than acoustical tiles for sound absorption correction.

Acoustical plasters find their main field in new construction where a uniform surface without joints—desirable from the standpoint of architectural design and where the absorption range of acoustical plaster best fits the period of reverberation desired.

Contrasting High and Low Absorption

The following is taken from a letter of a recognized and impartial authority on acoustics.

"A large area of low absorbing material is acoustically equivalent to a smaller area of more highly absorbing material, and where a sufficient area is available, it may often be advisable to use the material of lower absorption from consideration of greater acoustical uniformity. It is to be remembered that excessive absorption is as undesirable as a deficiency."

Other Desirable Features of An Acoustical Material

1—Acoustical treatment must provide a uniform degree of good hearing under varying conditions. An average sized audience must hear as distinctly as a full sized audience.

2—The treatment should be low in cost as well as simple and inexpensive to apply.

3—It should be a permanent building material and become an integral part of the structure.

4—It must be fireproof, rat and vermin proof and not an added hazard.

5—It must enhance and not detract from the decorative qualities of the interior.

6—The architect must be able to have free play for his treatment of the design of the interior.

Gold Bond Macoustic Has All the Above Qualities

Macoustic has precisely the qualities described above. Its successful use in fine interiors by some of the foremost architects confirm this fact.

Macoustic has a unique and distinctive porous structure with inter-communicating natural channels. These entrap sound waves that strike the surface and then, by friction, convert sound energy into heat energy.

Standardization of Absorption Values and the Acoustical Materials Association

For a number of years there has been some confusion in regard to relative values of various materials which are used for acoustical treatments, in the architectural and building fields.

In order to obtain correct unbiased and authoritative tests and technical data on these materials the Acoustical Materials Association was formed by manufacturers who were interested in accomplishing this result.

The National Gypsum Company is one of those manufacturers who recognized the value of such an organization and became one of the charter members.

Technical Advisory Committee

In order to insure absolute impartiality and reliability in the making of the tests a technical advisory committee was asked to cooperate by making the tests. The committee which made the tests on the various products and their uses comprised some of the best known and foremost authorities in the field of architectural acoustics, and consisted of the following members:

Paul E. Sabine, Riverbank Laboratories, Geneva, Ill.
V. L. Chrisler, Bureau of Standards, Washington, D. C.
V. K. Knudsen, University of California, Los Angeles, Calif.
R. F. Norris, C. F. Burgess Laboratories, Madison, Wis.
F. R. Watson, University of Illinois, Urbana, Ill.
S. K. Wolf, Electrical Research Products, Inc., N. Y. C.
Carl A. Erikson, representing the American Institute of Architects.

The data compiled by them is printed in the form of a bulletin. The tests, on the materials involved, have all been obtained in one laboratory, under identical test conditions. This bulletin is available on request.

The Relation of the Association to the Architect

The Association will publish from time to time complete authoritative data regarding the efficiency and ratings of all products made by the manufacturers of the Association. This information will be furnished to architects through the distribution of the Bulletin of the Association.

GOLD BOND SMOOTH FINISH MACOUSTIC FOR TROWELLED OR FLOATED FINISHES

National Gypsum Company's latest contribution to the acoustical plaster field . . . . A product that may be finished comparatively smooth and yet offer high sound absorption . . . . Fireproof, easily applied, permanent

SINCE the introduction of acoustical plasters some years ago, manufacturers have been striving to perfect a material that might be trowelled comparatively smooth and yet offer efficient sound absorption.

In October, 1935, National Gypsum Company announced just such a product . . . Gold Bond Smooth Finish Macoustic. This new material is rich and easy working and may be trowelled exceptionally smooth for an acoustical plaster, or floated.

It goes on easily with little or no droppage and the application cost is approximately the same as regular cement plaster. An all-mineral product, Gold Bond Smooth Finish Macoustic is absolutely fireproof, sanitary and vermin proof.

For the Acoustical Correction of All Types of Buildings, Including Swimming Pools

An outstanding advantage of the new Gold Bond Smooth Finish Macoustic is that it may be used in swimming pools as well as theatres, auditoriums, radio studios, offices and other buildings where acoustical treatment is desirable.

Many acoustical plasters, including our own Standard Macoustic, are not recommended for swimming pools or similar places where the material will be subjected to almost constant high humidity. Gold Bond Smooth Finish Macoustic may be used in buildings of this kind with entirely satisfactory results. It is, however, necessary to apply Macoustic over a portland cement base, as covered under "Mixing and Applying" in the next column.

Coefficient of Sound Absorption

The following table covers a report (dated Sept. 27, 1935) from the Bureau of Standards in Washington on Gold Bond Smooth Finish Macoustic. This test was made under conditions that simulated actual job conditions—the material being applied ½ inch thick over a base of gypsum plaster on metal lath, and trowelled smooth with a steel trowel.

Frequency	256	512	1024	2048
Coefficient of Sound Absorption	.23	.38	.53	.62

Coefficient of Noise Reduction, .45
(Average of these four frequencies).

Colors

Supplied in Color No. 1 White (Natural Color) and in the following factory mixed tints: Color No. 5—Ivory, Color No. 10—Cream, and Color No. 15—Buff. Samples of colors will gladly be supplied gratis.

When special colors are desired, it is suggested that the natural color (White) be used and spray painted with any good cold water paint. This will reduce the sound absorption very little. (An oil paint should not be used as that would seal the surface.)

Light Reflection

Gold Bond Smooth Finish Macoustic in the natural color (White) and trowelled smooth has a light reflection of approximately 70%.



Gold Bond Smooth Finish Macoustic May Be Trowelled Unusually Smooth for an Acoustical Plaster

Mixing and Applying

Gold Bond Smooth Finish Macoustic is mixed with clean water to the consistency of regular plaster and allowed to stand an hour before using.

It may be applied over a base of gypsum plaster, lime plaster or portland cement—the base coat to be bone dry and well scored.

Caution: When Gold Bond Smooth Finish Macoustic is to be used in a swimming pool or any other room where it will be subjected to almost constant high humidity, gypsum plaster should *not* be used for the base coat. Instead, use a base composed of equal parts of portland cement and finish lime with two parts of sand.

The first coat of Smooth Finish Macoustic is applied ¼ inch thick and brought to a true surface with darby or rod. A second coat ¼ inch thick is then applied and finished smooth with a minimum of trowelling. For best results a lapse of two hours should be allowed between coats.

A PARTIAL LIST OF MACOUSTIC INSTALLATIONS

NAME	LOCATION	ARCHITECT
ALABAMA		
Scottish Rite Temple	Montgomery	Hyman Witcover
U. S. Veterans' Hospital	Tuskegee	U. S. Veterans' Bureau
ARKANSAS		
U. S. Veterans' Hospital	Little Rock	U. S. Veterans' Bureau
CALIFORNIA		
National Broadcasting Studio	San Francisco	
DELAWARE		
P. S. duPont High School	Wilmington	
DISTRICT OF COLUMBIA		
John Quincy Adams School	Washington	A. L. Harris
National Broadcasting Studio	Washington	
FLORIDA		
Miami Senior High	Miami	Kiehnell & Elliott
Temple Israel	Miami	Robertson & Patterson
GEORGIA		
Bell Telephone Building	Atlanta	Marye, Alger & Vinour
City Hall	Atlanta	G. Lloyd Preacher & Co.
ILLINOIS		
Church of St. Basil	Chicago	Jos. W. McCarty
National Broadcasting Studio	Chicago	
KENTUCKY		
Louisville War Memorial	Louisville	Carrere & Hastings
LOUISIANA		
Bell Telephone Building	New Orleans	Marye, Alger & Vinour
MARYLAND		
Lord Baltimore Hotel	Baltimore	W. L. Stoddard
Western Suburban High School	Bethesda	
Elementary School	Bethesda	
Chevy Chase Elementary School	Chevy Chase	
Eastern Suburban High School	Silver Spring	
MASSACHUSETTS		
John Hancock Life Building	Boston	Parker, Thomas & Rice
Tileston School	Boston	Desmond & Lord
Wellesley College	Wellesley	Day & Klauder
State Mutual Building	Worcester	Parker, Thomas & Rice
MICHIGAN		
Henry Ford Museum	Dearborn	Robert O. Derrick
Bloomfield Country Club	Detroit	Smith, Moss & Mitschke
Lawrence Fisher Residence	Detroit	
Herman Keifer Hospital	Detroit	Albert Kahn, Inc.
University School	Detroit	Robt. O. Derrick, Inc.
Olds Motor Plant, Offices	Lansing	
U. S. War Veterans' Hospital	Newberry	
MINNESOTA		
Univ. of Minn. Hospital	Minneapolis	C. H. Johnston
MISSOURI		
Catholic Cathedral	St. Louis	Barnett, Haynes & Barnett
NEW JERSEY		
Convention Hall	Asbury Park	Warren & Wetmore
Camden Safe Deposit Co.	Camden	Rankin & Kellogg

NAME	LOCATION	ARCHITECT
NEW JERSEY (Continued)		
Holy Name of Jesus Church	East Orange	Meginnis & Walsh
Bamberger Store	Newark	Jarvis Hunt
Post Office	Newark	
NEW YORK		
Bronx Magistrate Court	Brooklyn	Max Hausle
Grassland Hospital	Eastview	Walker & Gillett
First Presbyterian Church	New Rochelle	J. Russell Pope
City Bank—Farmers Trust Co.	New York	Cross & Cross
Fordham University	New York	Emil Perrot
Junior League Club	New York	John Russell Pope
Clarence Mackay	New York	H. T. Lindberg
National Broadcasting Studio	New York	Walter Ahlschlager, Inc.
Salvation Army Building	New York	Voorhis, Gmelin & Walker
Second Church of Christ, Scientist	Rochester	Gordon & Kaelber
General Electric Co.	Schenectady	
Post Office	Albany	
Wassaic State School	Wassaic	
Cohocton Grade School	Cohocton	
Gilbertsville School	Gilbertsville	
NORTH CAROLINA		
Post Office	Asheville	J. A. Wettmore
Duke University	Durham	Horace Trumbauer
NORTH DAKOTA		
Post Office	Fargo	J. A. Wettmore
OHIO		
Canterbury School	Cleveland	John H. Graham & Sons
Church of the Savior	Cleveland	Corbusier & Foster
Public Auditorium	Cleveland	H. Kregelius & J. H. McDowell
St. Ignatius Church	Cleveland	E. T. P. Graham
Standard Oil Co.	Cleveland	Graham, Anderson, Probst & White
Union Terminal Building	Cleveland	Graham, Anderson, Probst & White
Gallery of Fine Arts	Columbus	Richard McCarty & Bulford
Lake Erie College	Painesville	Abram Garfield
PENNSYLVANIA		
Erie County Courthouse	Erie	Walter T. Monahan
Stauffer Restaurant	Philadelphia	Hadlow, Hughes, Hicks & Conrad
KDKA Studios	Pittsburgh	Janssen & Cocken
TEXAS		
Parkway Theatre	Fort Worth	W. Scott Dunne
Village Theatre	Dallas	Fooshee & Cheek
Rialto Theatre	Dallas	Green, La Roche & Dahl
Paramount Theatre	Austin	W. Scott Dunne
Uptown Theatre	Houston	Jonas & Tabor
VIRGINIA		
Woodrow Wilson High School	Danville	
William and Mary College (Marshall Wythe Hall)	Williamstown	
WASHINGTON		
Sacred Heart Academy	Seattle	Wm. L. Smith
WISCONSIN		
Bell Telephone Building	Milwaukee	

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1962 - 2011

THE Gold Bond HANDBOOK

ON INSULATION PRODUCTS
FOR THERMAL INSULATION
AND SOUND CONTROL

NATIONAL GYPSUM CO.—GENERAL OFFICES, BUFFALO, NEW YORK