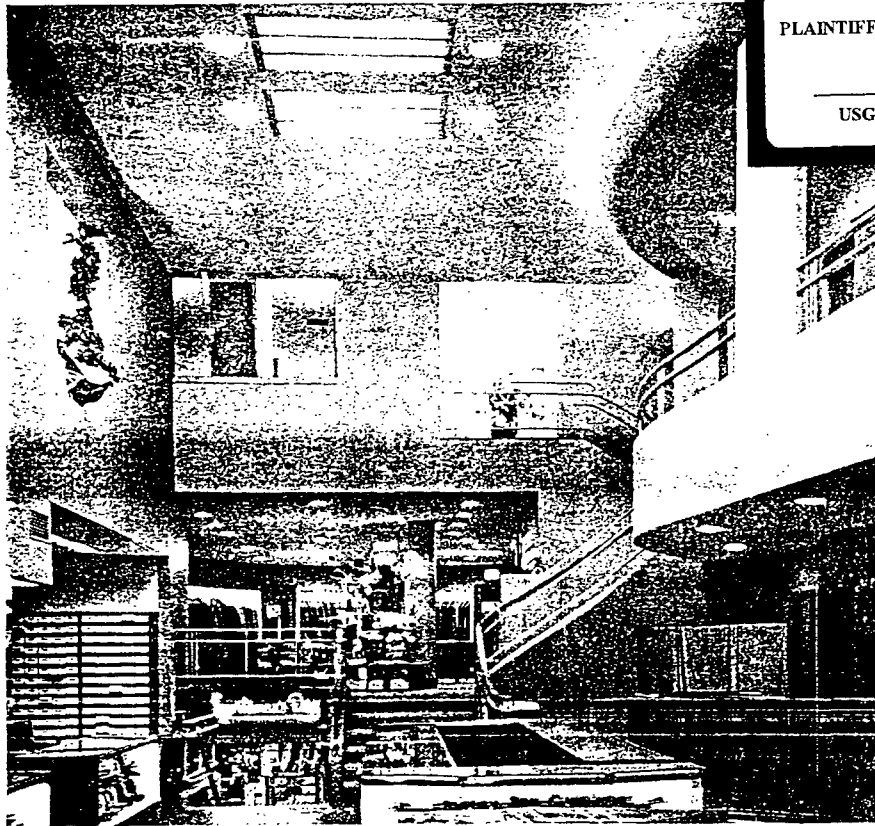


TECHNICAL INFORMATION

GYPSUM PLASTER

BASE COATS & FINISHES

FINISHING LIME & EXTERIOR STUCCO



PLAINTIFF'S EXHIBIT

USG-1704



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"RED TOP," "BONDCRETE," "PYROBAR," "ROCK-LATH," "ORIENTAL," "SABINITE," "IVORY," "GRAND PRIZE," "CHAMPION," "STAR" and "USG" are registered trade-marks owned by United States Gypsum Company and are used by it to distinguish products of its manufacture.

"RED TOP" identifies the particular plasters and finishes manufactured only by the United States Gypsum Company.

"BONDCRETE" identifies the particular plaster for concrete surfaces manufactured only by the United States Gypsum Company.

"PYROBAR" identifies the particular gypsum partition tile manufactured only by the United States Gypsum Company.

"ROCKLATH" identifies the particular gypsum lath or plaster base manufactured only by the United States Gypsum Company.

"ORIENTAL" identifies the particular colored finishes manufactured only by the United States Gypsum Company.

"SABINITE" identifies the particular acoustical plaster manufactured only by the United States Gypsum Company.

"IVORY" and "GRAND PRIZE" identify the particular hydrated lime manufactured only by the United States Gypsum Company.

"CHAMPION" and "STAR" identify the particular white gauging plasters manufactured only by the United States Gypsum Company.

"TRUSSTEEL" identifies the particular truss designed stud manufactured only by the United States Gypsum Company.

BASECOAT PLASTERS

RED TOP* CEMENT PLASTER

DESCRIPTION

RED TOP Cement Plaster is a neat gypsum plaster requiring the addition of an aggregate and water on the job. It is the basecoat that receives the finish coat plaster.

Complies with ASTM Designation C28-40 for "Gypsum Neat Plaster" and Federal Specification SS-P-402, Type N.

FUNCTION AND UTILITY

RED TOP Cement Plaster is used for scratch (1st coat) and brown (2nd coat) wherever good plastering aggregate is available.

FIREPROOF—Made from gypsum rock, it is incombustible and will not transmit high temperatures until completely calcined; a slow process. In this respect, gypsum plaster is unique. See fire test data page 8, for authoritative fire ratings.

ADAPTABLE—RED TOP Cement Plaster bonds firmly with ROCKLATH* plaster base, metal lath, fiber insulation lath, wood lath, PYROBAR* gypsum partition tile, clay tile, porous brick and certain other approved plaster bases.

RED TOP Cement Plaster is the standard of excellence for receiving such finish coats as lime putty, Keene's Cement, gypsum trowel finish, gypsum float finish, ORIENTAL* Interior finish, gypsum acoustical plasters, etc. It is an excellent base to receive acoustical tile.

RED TOP Cement Plaster is plastic, permitting wide latitude in its use for plain or curved surfaces.

UNIFORM—RED TOP Cement Plaster is manufactured on a nation-wide basis within narrow limits of tolerance. Its "stabilized set" minimizes the hazards due to impure water or aggregate and job conditions. Its set is adjusted for seasonal conditions.

STRONG—When mixed with good sand according to specifications, RED TOP Cement Plaster has a compressive strength up to 1,000 lbs. per sq. in. (see test data, page 36). It is capable of withstanding normal wear and usage for the life of the building.



ECONOMICAL—RED TOP Cement Plaster is lowest in cost of the various types of gypsum basecoats because:

The neat plaster is low in cost and is mixed with economical aggregate which increases bulk and coverage.

RED TOP Cement Plaster is highly plastic, thus is easily and quickly applied by the mechanic.

Normal usage requires little or no maintenance.

LIMITATIONS OF USE

1. RED TOP Cement Plaster should have aggregate added strictly according to specifications. Use of too much aggregate drastically decreases its strength. Sand content is easily calculated. A No. 2 shovel full of damp sand weighs approximately 15 lbs. The light weight aggregates are generally shipped in 4 cu. ft. bags.

2. Under no conditions should RED TOP Cement Plaster be applied to concrete. Use BONDCRETE* Plaster, described on page 7.

3. RED TOP Cement Plaster should not be used where contact with excessive water or moisture is expected. In such instances, use portland cement-lime plaster.

4. RED TOP Cement Plaster is an interior basecoat plaster and should not be used on the exterior where exposed to the elements.

5. Because bituminous compounds do not provide an ideal base for gypsum plaster basecoats, plaster application on masonry walls and concrete that have been coated with these compounds is not recommended.

*Trademark Reg. U. S. Pat. Off.

BASECOAT PLASTERS

PLASTERING SPECIFICATIONS (FOR RED TOP CEMENT PLASTER)

GENERAL PROVISIONS

In cold weather a minimum temperature of 40° F. shall be maintained in the building until the plaster is dry. After plaster has set, ventilation shall be provided to eliminate excessive moisture in the building. In hot, dry weather, all openings shall be closed with sash or cloth during the application of plaster. No plaster shall be allowed to dry before setting.

SCOPE

Unless otherwise specified or shown on drawings, all walls and ceilings shall be plastered as herein described.

MATERIALS

Basecoat plaster shall be RED TOP Cement Plaster manufactured by the United States Gypsum Company (except that the scratch coat over metal lath shall be fibred RED TOP Cement Plaster).

Aggregate (*Note to Architect—Select one or more of the following aggregates as desired or required to meet fire resistance rating.*)

Sand—Shall be clean and sharp, complying with ASTM designation C35-39.

Vermiculite—Shall be standard plaster aggregate complying with ASTM designation C35-39 for particle size and shall weigh between 7½ and 10 pounds per cubic foot.

Perlite—Shall be standard plaster aggregate complying with ASTM designation C35-39 for particle size and shall weigh between 7½ and 15 pounds per cubic foot.

Water—Shall be clean, fresh and suitable for domestic consumption.

Finish Plaster—(*Note to Architect—Select the desired finish from pages 10 to 14, and insert herein the applicable materials.*)

GROUNDINGS

The total plaster thickness over gypsum lath, gypsum partition tile or fiber insulation lath, shall be ½"; over brick, clay tile or other masonry, it shall be ⅝" thick and over metal lath the plaster thickness shall be ⅝" measured from the face of the lath. (Greater thickness in grounds may be required for certain fire ratings. See table, page 8.)

MIXING OF BASECOATS

For *Three-Coat Work*, the scratch or first coat over all lath shall be mixed in the proportion of one part plaster to not more than two parts sand by weight (13 No. 2 shovels of damp sand per 100-lb. bag of plaster) or 100 lbs. of gypsum plaster to not more than 2 cu. ft. of vermiculite or perlite. The brown or second coat over all lath shall be mixed in the proportion of one part gypsum plaster to

not more than three parts sand by weight (20 No. 2 shovels of damp sand per 100-lb. bag of plaster) or 100 lbs. of gypsum plaster to 3 cu. ft. of vermiculite or perlite.

For *Two-Coat Work* over masonry surfaces (except monolithic concrete) the base (scratch double back) shall be mixed in the proportion of one part plaster to three parts sand by weight or 100 lbs. of plaster to 3 cu. ft. of vermiculite or perlite. When perlite is used as the aggregate over masonry and it is impractical to reduce suction by wetting, the amount of perlite may be increased to not more than 4 cu. ft.

(*Note to Architect*)—In scratch double back application of gypsum cement plaster to gypsum lath or fibre insulation lath only the proportions shall be as follows:

Two-Coat Work, over gypsum lath or fibre insulation lath, shall be in the proportion of one part gypsum cement plaster to not more than 2½ parts of sand by weight (17 No. 2 shovels of damp sand per 100-pound bag of plaster) or 100 pounds of gypsum plaster to not more than 2½ cubic feet of vermiculite or perlite.

APPLICATION OF BASECOATS

(*Note to Architect*). *Three-coat work is the preferred plaster specification, because it is more conducive to application to full grounds. It may be used throughout the job except over masonry where 2-coat work is preferred. Three-coat work should always be required over metal lath and resilient lathing systems.*

Three-Coat Work—Scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on wood and metal lath, wire lath and wire fabric, and good bond on gypsum or fibre insulation lath, as the case may be, and to cover well, and then be scratched to rough surface.

Brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface with rod and darby, and left rough, ready to receive the finish (third) coat.

Two-Coat Work—Base (first) coat shall be applied with sufficient material and pressure to form good full keys on wood lath, and good bond on gypsum or fibre insulation lath or masonry, as the case may be, and to cover well, and then be doubled back to bring the plaster out to grounds, straightened to true surface with rod and darby and left rough, ready to receive the finish (second) coat. To avoid excess suction and dry-outs, it is preferable to moderately wet masonry surfaces before plastering.

MIXING AND APPLICATION OF FINISHES

Use the applicable finish coat specifications selected from pages 10 to 14.

BASECOAT PLASTERS

RED TOP WOOD FIBER PLASTER

DESCRIPTION

RED TOP Wood Fiber Plaster is a factory-prepared gypsum basecoat plaster containing finely-shredded, selected wood fiber. It requires the addition of water only on the job.

Complies with ASTM Designation C28-40 "Gypsum wood-fibered plaster" and Federal Specifications SS-P-402, Type W.

FUNCTION AND UTILITY

STRONGER—Compared to plaster sanded 1:3, Wood Fiber Plaster has:

3 times greater compressive and tensile strength.

2½ times greater resistance to lateral impact.

50 per cent greater surface hardness.

Consequently, has greater resistance to cracking.

FIREPROOF—Generally 50 per cent more fire resistant than sanded plaster. See ratings on page 8.

FACTORY PREPARED—Particularly suitable where good aggregates are unavailable. Avoids dangers of improper proportioning of aggregates.

LIGHTWEIGHT—Dead load is 25 per cent lighter than sanded plaster.

COST—A wood fiber basecoat plaster job costs approximately 15 per cent more than RED TOP Cement Plaster sanded on the job.

LIMITATIONS

Same as paragraphs 2, 3, 4 and 5 under Limitations for use of RED TOP Cement Plaster, page 3.

PLASTERING SPECIFICATIONS

(FOR RED TOP WOOD FIBER PLASTER)

GENERAL PROVISIONS

In cold weather a minimum temperature of 40°F. shall be maintained in the building until the plaster is dry. After plaster has set, ventilation shall be provided to eliminate excessive moisture in the building. In hot, dry weather, all openings shall be closed with sash or cloth during the application of plaster. No plaster shall be allowed to dry before setting.

SCOPE

Unless otherwise specified or shown on drawings, all walls and ceilings shall be plastered as herein described.

MATERIALS

Basecoat plaster shall be RED TOP Wood Fiber Plaster manufactured by United States Gypsum Company.

Finish Plaster—(Note to Architect—Select the desired finish from pages 10 to 14, and insert herein the applicable materials).

GROUND

The total plaster thickness over gypsum lath, PYROBAR gypsum partition tile or fiber insulation lath shall be ½"; over brick, clay tile or other masonry, it shall be ⅝" thick, and over metal lath the plaster thickness shall be ⅝" measured from the face of lath.

MIXING AND APPLICATION

On all types of lath, RED TOP Wood Fiber Plaster shall be mixed with water only on the job. The scratch and brown coats over masonry surfaces (except monolithic concrete), shall be mixed in the proportion of 1 part Wood Fiber Plaster to 1 part sand by weight (7 No. 2 shovels of damp sand per 100-lb. bag Wood Fiber plaster).

The scratch coat of plaster shall be applied to a thickness of approximately ¼" with sufficient pressure to form a good bond. Cross rake and allow to set. When partially dry, apply the brown or second coat to full grounds, allowing approximately ⅛" for the finish coat. Rod and darby to a true and level surface and roughen slightly.

All porous masonry surfaces shall be moderately wetted to provide proper suction before plastering. Brown (second coat) shall be applied after the scratch (first coat) has "taken up," but before it sets.

OPTIONAL INCLUSION

At the option of the contractor, all brown coats may be applied to the unset scratch coat, *except when plastering over metal lath or Resilient ROCKLATH ceilings.*

MIXING AND APPLICATION OF FINISH COAT PLASTER

Use the applicable finish coat specifications selected from pages 10 to 14.

BASECOAT PLASTERS

RED TOP SANDED PLASTER

DESCRIPTION

RED TOP Sanded Plaster is a factory-sanded gypsum basecoat plaster requiring the addition of water only, on the job.

Complies with ASTM Designation C28-40 for "Gypsum Ready-sanded Plaster" and Federal Specification SS-P-402, Type S (scratch coat) or Type B (brown coat).

FUNCTION AND UTILITY

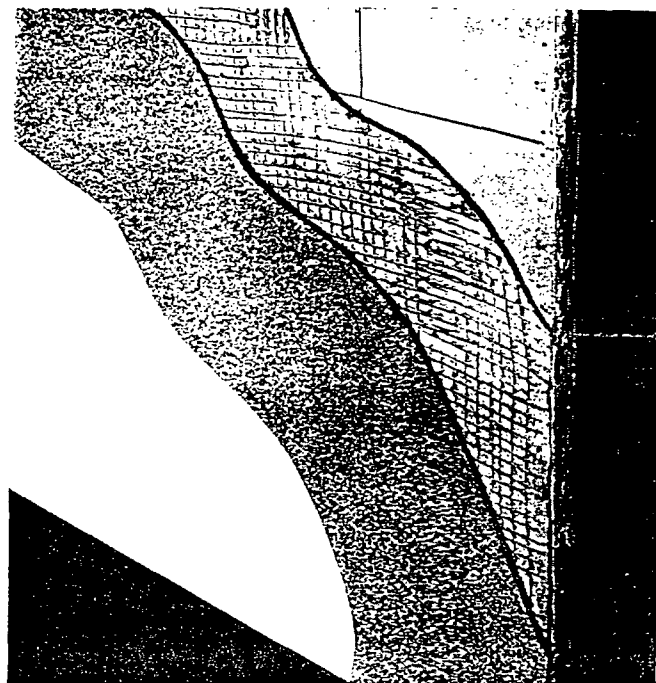
RED TOP Sanded Plaster is particularly suitable where good plastering sand is not available. It provides all those features described for RED TOP Cement Plaster, plus the following:

FACTORY SANDED—Properly selected aggregate correctly proportioned and machine-mixed.

COST—Slightly higher than job-sanded RED TOP Cement Plaster, but more economical than other gypsum basecoat plasters.

LIMITATIONS OF USE

Same as paragraphs 2, 3, 4 and 5 of Limitations of Use under RED TOP Cement Plaster, page 3.



PLASTERING SPECIFICATIONS (FOR RED TOP SANDED PLASTER)

GENERAL PROVISIONS

In cold weather a minimum temperature of 40°F. shall be maintained in the building until the plaster is dry. After plaster has set, ventilation shall be provided to eliminate excessive moisture in the building. In hot, dry weather, all openings shall be closed with sash or cloth during the application of plaster. No plaster shall be allowed to dry before setting.

SCOPE

Unless otherwise specified or shown on drawings, all walls and ceilings shall be plastered as herein described.

MATERIALS

Basecoat Plaster shall be RED TOP Sanded Plaster manufactured by United States Gypsum Company. Over masonry, RED TOP Sanded Plaster (for masonry) shall be used.

Finish Plaster (Note to Architect—Select the desired finish from pages 10 to 14, and insert herein the applicable materials).

GROUND

The total plaster thickness over gypsum lath, PYROBAR gypsum partition tile or fiber insulation lath shall be $\frac{1}{2}$ "; over brick, clay tile or other masonry it shall be $\frac{5}{8}$ "

thick, and over metal lath the plaster thickness shall be $\frac{5}{8}$ " measured from the face of the lath.

MIXING AND APPLICATION

Sanded plaster shall be mixed with water only. The scratch coat of plaster shall be applied to a thickness of approximately $\frac{1}{4}$ " with sufficient pressure to form a good bond. Cross rake and allow to set. When partially dry, apply the brown or second coat to full grounds, allowing approximately $\frac{1}{8}$ " for the finish coat. Rod and darby to a true and level surface and roughen slightly.

All porous masonry surfaces shall be moderately wetted to provide proper suction before applying scratch coat. Brown (second coat) shall be applied after the scratch (first coat) has "taken up," but before it sets.

OPTIONAL INCLUSION

At the option of the contractor, all brown coats may be applied to the unset scratch coat, *except when plastering over metal lath or Resilient ROCKLATH ceilings.*

MIXING AND APPLICATION OF FINISH COAT PLASTER

Use the applicable finish coat specifications selected from pages 10 to 14.

BASECOAT PLASTERS

BONDCRETE* PLASTER

DESCRIPTION

RED TOP BONDCRETE is a gypsum basecoat plaster specially formulated to bond with rough interior monolithic concrete surfaces. It is factory prepared, requiring addition of water only on the job.

There are no ASTM or Federal Specifications covering this type of plaster.

FUNCTION AND UTILITY

BONDCRETE is plaster especially prepared for application to concrete. It provides the bonding plaster to receive a browning, or leveling, coat of RED TOP Cement Plaster or Wood Fiber Plaster when necessary.

If a leveling coat is unnecessary, the finish plaster may be applied directly to the BONDCRETE.

BONDING STRENGTH—BONDCRETE adheres well

to properly prepared concrete surfaces. See Surface Preparation under Specifications for proper conditioning of concrete surfaces. This is important.

The thermal coefficient of expansion of BONDCRETE is approximately the same as for concrete.

LOW COST—An economical bonding coat to provide for the application of plaster direct to concrete surfaces.

LIMITATIONS OF USE

1. BONDCRETE should be used only on concrete that is properly prepared for plastering. It should never be applied to smooth concrete.

2. Maximum thickness of BONDCRETE and basecoat shall not exceed $\frac{3}{8}$ " on ceilings or $\frac{1}{2}$ " on walls. If additional thickness is required, metal lath shall be secured to the concrete surfaces.

3. The same as paragraphs 3, 4, and 5 under RED TOP Cement Plaster, page 3.

PLASTERING SPECIFICATIONS

(FOR RED TOP BONDCRETE PLASTER)

1. *Under Materials of the Plastering Specification, include the following:*

Basecoat for plastering over concrete surfaces shall be BONDCRETE manufactured by United States Gypsum Company.

2. *Under Mixing and Application, include the following:*

Mix BONDCRETE with water only. Concrete surfaces to receive plaster shall be properly prepared as specified elsewhere. Surfaces of walls and columns shall have a scratch coat of bond plaster, followed by a brown coat of gypsum plaster in the proportions of 1 part of gypsum neat plaster to not more than 3 parts of sand, by weight) trowelled into the scratch coat before it has set. The brown coat shall be brought out to grounds, straightened to a true surface with rod and darby, and left rough, ready to receive the finish coat. Total thickness of plaster not to exceed $\frac{5}{8}$ ".

Concrete ceilings shall have a coat of bond plaster scratched in thoroughly, doubled back, and filled out to a true, even surface and left rough, ready to receive the finish coat. Total thickness of plaster not to exceed $\frac{3}{8}$ ".

If additional thickness of plaster is required, metal lath shall be secured to the concrete surface.

3. *A separate paragraph must be included as follows:*

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Surface Preparation. Monolithic concrete surfaces shall be cleaned of all dust, loose particles, and other foreign matter. Laitance and efflorescence shall be removed by washing first with a 10 per cent solution of commercial muriatic acid and water and then with clean water to remove all traces of acid. Grease and oil shall be completely removed.

Note to Architect: A smooth concrete surface resulting from pouring on smooth forms, or vibrating of concrete, is an improper base for BONDCRETE application. (See Red Top Cover Coat, page 13.)

Concrete surfaces shall have sufficient roughness to provide proper bond. If surfaces are not rough, they shall be hacked or bush-hammered, or a dash-coat of portland cement grout, composed of 1 part of cement and $1\frac{1}{2}$ parts of fine sand mixed to a mushy consistency, shall be applied. Using a stiff fiber brush, the portland cement grout shall be forcibly dashed on the concrete surface with a whipping motion. This coat shall be kept damp for at least 2 days immediately following its application and then allowed to dry. Before application of the plaster, the surface shall be evenly dampened if necessary to provide proper suction.

BASECOAT PLASTERS

TECHNICAL DATA AVERAGE TEST RESULTS

MIX:	WOOD FIBER	CEMENT PLASTER						
		SAND			VERMICULITE		PERLITE	
		1:1	1:2	1:3	100:2	100:3	100:2	100:3
COMPRESSIVE STRENGTH—psi (dry)	2600	2100	1200	750	500	300	1000	650
TENSILE STRENGTH—psi (dry)	440	245	170	120	130	90	165	105
COST FACTOR, LABOR & MATERIAL	100	95	93	90	95	95	95	95

FIRE TEST DATA

PANEL TYPE				RATING AND REFERENCE
CONSTRUCTION	TYPE BASE	PLASTER & AGGREGATE	THICKNESS	
PARTITIONS				
Wood Frame	3/8" ROCKLATH Plain	Gypsum-Sand 1:2, 1:2	1 1/2"	45 Minutes (1)
Wood Frame	3/8" ROCKLATH Plain	Gypsum Wood Fiber	1 1/2"	1 Hour (1)
Wood Frame	3/8" Perl. ROCKLATH	Gypsum-Sand 1:2, 1:2	1 1/2"	1 Hour (1)
Wood Frame	3/8" Perl. ROCKLATH	Gypsum-Perlite 100:2 1/2, 100:2 1/2 (4)	1 1/2"	1 Hour (2)
Wood Frame	Metal lath	Gypsum-Sand 1:2, 1:3	3/4"	45 Minutes (1)
Wood Frame	Metal lath	Gypsum-Sand 1:2, 1:2	3/4"	1 Hour (1)
Wood Frame	Metal lath	Gypsum Wood Fiber	3/4"	1 1/2 Hours (1)
Wood Frame	Metal lath	Gypsum-Vermiculite 100:2 1/2, 100:3 1/2	3/4"	1 Hour (2)
3" Hollow PYROBAR		Gypsum-Sand 1:3	1 1/2"	2 Hours (1) (2) (3)
4" Hollow PYROBAR		Gypsum-Sand 1:3	1 1/2"	3 Hours (1) (3)
Solid	Metal lath	Gypsum-Sand 1:2, 1:3	2"	45 Minutes (1)
Solid	Metal lath	Gypsum-Sand 1:2, 1:2	2"	1 Hour (3)
Solid	Metal lath	Gypsum Wood Fiber	2"	1 3/4 Hours (1)
Solid	Metal lath	Gypsum Wood Fiber	2 1/4"	2 Hours (1)
Solid	ROCKLATH	Gypsum-Sand 1:1, 1:2	2"	1 Hour (3)
TRUSSTEEL† Stud	Metal lath	Gypsum-Sand 1:2, 1:3	3/4"	45 Minutes (1)
TRUSSTEEL Stud	Metal lath	Gypsum-Sand 1:2, 1:3	7/8"	1 Hour (1)
TRUSSTEEL Stud	Metal lath	Gypsum-Sand 1:2, 1:2	3/4"	1 Hour (1)
TRUSSTEEL Stud	Metal lath	Gypsum Wood Fiber	7/8"	2 Hours (1)
CEILINGS				
Wood Frame	3/8" Perl. ROCKLATH	Gypsum-Sand 1:2	1 1/2"	45 Minutes (1) (2)
Wood Frame	3/8" Perl. ROCKLATH*	Gypsum-Sand 1:2	1 1/2"	1 Hour (1)
Wood Frame	Metal lath	Gypsum-Sand 1:2, 1:3	3/4"	45 Minutes (1)
Wood Frame	Metal lath**	Gypsum-Sand 1:2, 1:3	3/4"	1 Hour (1)
Wood Frame	Metal lath	Gypsum Wood Fiber	3/4"	1 Hour (2)
Steel Joist***	Metal lath	Gypsum-Sand 1:2, 1:3	3/4"	2 Hours (1)
Steel Joist***	Metal lath	Gypsum-Vermiculite 100:2, 100:3	3/4"	3 Hours (1)
Steel Joist***	Metal lath	Gypsum Wood Fiber	1"	3 Hours (1)
Steel Joist***	Metal lath	Gypsum-Vermiculite 100:2, 100:3	1"	4 Hours (1)
Cellular Steel Floor	Metal lath****	Gypsum Wood Fiber	1"	4 Hours (1)
Cellular Steel Floor	Metal lath****	Gypsum-Vermiculite 100:2, 100:3	1"	4 Hours (1)
Cellular Steel Floor	Metal lath****	Gypsum-Perlite 100:3, 100:3 (4)	1"	4 Hours (2)
COLUMNS				
Steel Section	Metal lath	Gypsum-Sand 1:2, 1:3	3/4"	1 Hour (1)
Steel Section	Metal lath*****	Gypsum-Vermiculite 100:2, 100:3	1"	3 Hours (2)
Steel Section	Metal lath*****	Gypsum-Vermiculite 100:2, 100:3	1 1/2"	4 Hours (2)
Steel Section	Metal lath*****	Gypsum-Perlite 100:3, 100:3 (4)	1"	3 Hours (2)
Steel Section	Pyrobar-2" Solid, or 3" Hollow	Gypsum-Sand 1:3	1 1/2"	4 Hours (1)

(1) National Bureau of Standards. (2) Underwriters' Laboratories. (3) Nationally recognized fire testing laboratory—name on request.

(4) Great Lakes Carbon Corporation's "Permalite" Perlite.

*Lath applied with 1 1/8", 13 gauge nails, 3/8" head and joints covered with Striplath, 1 3/4" nails.

**Lath applied with 1 1/2", 11 gauge, 7/16" head barbed roofing nails, 6" O.C.

***2 1/2" reinforced concrete slab on Riblath or 2" precast gypsum tile above.

****Ceiling 9" or more below floor slab.

*****Metal lath spaced minimum of 1 1/4" from column.

FINISHING PLASTERS

DESCRIPTION

The finish coat plaster provides the base for final wall or ceiling decoration. It is applied to a thickness of $\frac{1}{8}$ " to $\frac{3}{8}$ ", usually over a gypsum plaster basecoat.

Several types of finish coats are available, each with characteristics to serve specific requirements, and generally classified according to the principal cementitious ingredient as follows:

1. *Lime and Gauging*, commonly known as "white coat" for a smooth white trowel finish. It consists of lime, soaked to a smooth putty, and mixed with gypsum gauging plaster. With addition of sand, is adaptable for sand float finishes. The three essentials to a good white coat job are:

- Lime must be highly plastic and completely hydrated.
- Correct proportioning of gauging plaster to lime putty (see specifications) and thorough blending of ingredients.
- Careful application and sufficient trowelling to produce a smooth glossy surface.

2. *Lime and Keene's*—for extra hard smooth white trowel finish. With addition of sand, is adaptable for sand float finishes. Also available mill mixed and colored under "ORIENTAL"* Interior Finish brand.

3. *Gypsum*—Trowel (smooth), or sand float prepared finishes.

4. *Acoustical Plaster*—(SABINITE*), for sound absorption. (See page 13 or AIA File 39-B.)

ESSENTIALITY OF COMPLETE HYDRATION IN DOLOMITIC FINISHING LIMES

Some years ago an exhaustive investigation was undertaken by the National Bureau of Standards in co-operation with several architects and lime manufacturers to determine reasons for "lime bulges" (delamination of finish from basecoat) occurring on many government and private buildings. The failures investigated occurred on surfaces which had been "white coated" with *dolomitic* hydrated finishing limes from the Ohio fields, which have been widely used. Failures often occur 5 or 10 years after erection of the buildings.

After much analysis, it was the consensus of opinion that the delayed hydration and attendant expansion of unhydrated oxides in the "normal" dolomitic finishing limes resulted in bulging and delamination.

To correct this difficulty, United States Gypsum Company took the lead in developing "IVORY"* Pressure Hydrated finishing lime, a "fully" or "pressure" (less than 8 per cent unhydrated) hydrated Ohio dolomitic finishing lime.

ASTM specifications C206-46T for *special* finishing lime and proposed amendments to Federal specifications, have been written to cover 92 per cent hydrated limes; a specification has been published by the National Lime Association. This type of finishing lime is required by ASA Specifications for Gypsum Plastering, A42.1-1946.

Note that all high calcium hydrated limes (properly soaked) comply with these requirements as do high calcium quicklimes (properly slaked).

TECHNICAL DATA—FINISH PLASTERS

	GAUGING PLASTER TO LIME	QUICK TROWELLING KEENE'S TO LIME		GYPSUM TROWEL FINISH	GYPSUM FLOAT FINISH	ORI- ENTAL FINISH
Mix by weight of dry materials:	1:2	2:1 Medium Hard	4:1 Hard	NEAT	NEAT	NEAT
Color	White	White	White	White	White or Gray	12 Colors
Finish Texture	Smooth	Smooth	Smooth	Smooth	Float	Float
Hardness in Kilograms (†)	34	50	70	55	(‡)	(‡)
Workability	1	4	5	2	3	6
Cost Factor Labor & Mat'l.	100	170	180	125	125	160
(†) Kilograms required to force a 10MM ball .01" into plaster face.						
(‡) These are hard finishes but the aggregate in the surface does not permit an indication with this test.						

*Trademark Reg. U.S. Pat. Off.

FINISHING PLASTERS

LIME PUTTY—GAUGING (WHITE COAT) FINISH

DESCRIPTION

Hydrated Finishing Lime (or Finishing Quicklime) is soaked (or slaked) to putty consistency, blended in proper proportion with gypsum gauging plaster, and is trowelled to a smooth, hard finish usually over a properly prepared gypsum basecoat. This is by far the most widely used plaster finish coat due to ease of application, flexibility, whiteness and economy.

FUNCTION & UTILITY OF INGREDIENTS

LIMES:

The function of lime in a finish plaster is to provide the "spread" and plasticity to permit fast, easy application with full flexibility and economy. Lime does not "set," but hardens slowly; it likewise shrinks on drying. Therefore, gypsum gauging must be blended into the lime putty in proper proportion to provide initial set and strength, and to avoid shrinkage cracks.

IVORY—A double-hydrated (over 92%) special finishing lime that will not expand measurably in the wall. Requires no soaking to produce a smooth, uniform, white, highly plastic putty. May be mixed by adding dry lime and gauging to water in mechanical mixer because it develops its normal plasticity almost immediately. This is the preferred lime. Meets ASTM Designation C206-49 Type S and Federal Specification SS-L-351, Type F, including the added requirement of not more than 8% unhydrated oxides.

RED TOP and GRAND PRIZE*—Shipped from *Genoa, Ohio*, are normal dolomitic hydrated finishing limes, and are only partially hydrated. They comply with Federal Specification SS-L-351, Type F, and ASTM Designation C6-49, Type N, but do not comply with specifications limiting the unhydrated oxides to 8 per cent.

RED TOP Hydrated Limes shipped from *Farnams, Massachusetts* and *New Braunfels, Texas*, are high calcium limes and are completely hydrated. They comply with ASTM C206-49 Type S and Federal Specification SS-L-351, and meet specifications limiting the unhydrated oxides to not more than 8 per cent.

All types of USG* hydrated lime except "IVORY" Finish Hydrate require overnight soaking. They yield a smooth, highly plastic putty of exceptional purity. Until the advent of autoclaved hydrates, such as "IVORY," they were the standards of excellence.

RED TOP and CHESHIRE Brands—Are high calcium finishing quicklimes. When properly slaked and aged for

at least 48 hours, hydration is complete, (over 92%) thereby insuring against further hydration and attendant possibilities of expansion on the wall. Comply with ASTM Designation C5-26, and Federal Specification SS-Q-351. They have unusually high plasticity and purity.

GAUGING PLASTERS

1. **CHAMPION*** and **STAR*** are White Gauging Plasters, for blending with lime putty to provide initial set and strength. They are ground to the proper fineness to blend readily and completely, thus minimizing the danger of check-cracking, crazing, etc. when properly used. They give strength and hardness to the surface finish. CHAMPION has a quicker "set" than STAR Gauging Plaster. They are the preferred gauging plasters because of the extreme whiteness of the finish when used with limes of high purity.

Complies with ASTM Designation C28-40 "Calcined gypsum for finishing coat (white)" and Federal Specification SS-P-402, Type G.

2. **RED TOP Gauging** is a "local" gauging plaster, so called because it is made from a rock grade that is used in basecoat plasters. It is available with slow or fast "set." It is distinguished from White Gauging Plasters by its darker color. Except for color, RED TOP Gauging Plasters are the equal of CHAMPION and STAR Gauging Plasters.

Complies with ASTM Designation C28-40 "Calcined gypsum for finishing coat (gray)" and Federal Specification SS-P-402, Type G.

PROPORTIONING—See Specifications

LIMITATIONS OF USE

1. For interior application only.
2. Recommended proportioning must be observed. Failure to use sufficient gauging plaster, to blend thoroughly, or to trowel adequately often results in check-cracking, crazing, lack of hardness and bond failure.
3. Designed for normal humidity conditions. Where excessive humidity or frequent exposure to moisture is expected, use Keene's Cement as later described.
4. Designed for normal usage. If hardness, and resistance to abrasion is required, use Keene's Cement as later described.
5. Must be applied to gypsum or lime plaster basecoat. Lime-gauging bond to portland cement plasters is inadequate. Do not apply direct to masonry.

FINISHING PLASTERS

LIME PUTTY — GAUGING (WHITE COAT) FINISH — Continued

SPECIFICATIONS

Include the following in plaster specifications given on pages 4 to 7.

MATERIALS

Lime for finish plaster shall be (select one):

(*IVORY Finish Hydrate Lime*)

(*RED TOP or CHESHIRE Finish Quicklime*)

(*RED TOP or GRAND PRIZE Finish Hydrate Lime*)

manufactured by United States Gypsum Company.

Gauging Plaster shall be (select one):

(*CHAMPION or STAR "White" Gauging Plaster*)

(*RED TOP "Local" Gauging Plaster*)

manufactured by United States Gypsum Company.

MIXING AND APPLICATION OF FINISH PLASTER

Lime shall be thoroughly soaked (or slaked and aged) according to manufacturer's directions printed on containers. (*NOTE: IVORY Finish Hydrate requires no soaking or slaking.*) Mix in the proportions of 3 parts lime putty to 1 part of gauging plaster, by volume. The equivalent by weight shall be 2 parts dry lime to 1 part dry gauging plaster. Mixing shall be done on plasterer's board, thoroughly blending the gauging into the lime putty. When thoroughly mixed, it shall be applied to a surface-dry basecoat. Scratch in thoroughly and immediately double back to fill out to a true even surface. Thickness to be $\frac{1}{16}$ " to $\frac{1}{8}$ ". Trowel once before final set, and water trowel after set to provide dense surface for decoration. Brush with clean water only.

KEENE'S-LIME FINISH

DESCRIPTION

Keene's Cement is a high strength, white gypsum plaster. Keene's-Lime finish is composed of lime putty blended with Keene's Cement in proportions required to obtain desired hardness.

Complies with ASTM Designation C61-40 and Federal Specification SS-C-161, Type I (Regular) and Type II (Quick Troweling).

FUNCTION AND UTILITY

In addition to those listed for lime putty-gauging, it provides:

RESISTANCE TO ABRASION. Keene's Cement has exceptionally high strength and surface hardness. See Technical Data.

LOW WATER ABSORPTION. Keene's Cement, having a high density, has low water absorption.

CHOICE OF HARDNESS. Keene's Cement is mixed with lime putty in varying proportions for "hard" and "medium hard" finishes. See Technical Data and specifications.

TWO TYPES. Regular and Quick Troweling. Regular Keene's sets slowly, requires more troweling and may be used with any proportion of lime.

Quick Troweling Keene's sets faster, requires less troweling and must be used with a minimum of 25 lbs. of dry hydrated lime per 100 lbs. of Keene's Cement.

LIMITATIONS OF USE

1. Keene's Cement is for interior finishes only.
2. Keene's Cement finish is not recommended where exposure to water is extreme or continuous. Use portland cement-lime plaster.
3. For application over gypsum basecoats of high compressive strength only.

SPECIFICATIONS

The following should be included in plaster specifications given on pages 4 to 7.

MATERIALS

Keene's Cement shall be (Regular Keene's Cement) (Quick Troweling Keene's Cement) manufactured by United States Gypsum Company.

Lime—(*Refer to Lime Gauging Specifications, above, and select one*).

MIXING AND APPLICATION

This specification should be exactly as given for Lime-Gauging, except that Keene's Cement should be substituted for Gauging Plaster and the proportioning should be changed to one of the following:

FINISHING PLASTERS

KEENE'S—LIME FINISH—MIXING AND APPLICATION CONTINUED

1. "*Medium Hard*" Finish shall be mixed in the proportion of 50 lbs. of dry hydrated lime to 100 lbs. of Keene's Cement. This proportion is approximately 100 lbs. of lime putty to 100 lbs. of Keene's Cement, or 35 qts. of lime putty to 100 lbs. of Keene's Cement.

2. "*Hard*" Finish shall be mixed in the proportion of 25 lbs. of dry hydrated lime to 100 lbs. of Keene's Cement. This proportion is approximately 50 lbs. of lime putty to

100 lbs. of Keene's Cement, or 17 qts. of lime putty to 100 lbs. of Keene's Cement.

3. *Keene's Lime-Sand Float Finish* shall be mixed in the proportion of 50 lbs. of dry hydrated lime, 100 lbs. of Keene's Cement and 400 lbs. of sand. This proportion is approximately 100 lbs. of lime putty, 100 lbs. of Keene's Cement and 400 lbs. of sand, or 35 qts. of lime putty, 100 lbs. of Keene's Cement and 4 to 5 cu. ft. of sand (26 No. 2 shovels of sand).

PREPARED GYPSUM FINISHES

RED TOP GYPSUM TROWEL FINISH and RED TOP GYPSUM SAND FLOAT FINISH

DESCRIPTION

RED TOP Trowel and Sand Float finishes are mill-prepared gypsum finish coat plasters requiring the addition of water only.

There are no ASTM or Federal Specifications covering this type of plaster.

FUNCTION AND UTILITY

RED TOP GYPSUM TROWEL FINISH—is used where hard, smooth surfaces are desired.

RED TOP GYPSUM SAND FLOAT FINISH—is used where a quality float finish is desired.

STRENGTH—approximately twice the strength of ordinary lime-gauging finishes.

EARLY DECORATION—may be painted as soon as set and dry.

FACTORY PREPARED—mill selection of ingredients and formulation insure uniform results and avoid variations possible with job mixing.

NON-ALKALINE—contain nothing injurious to paint or decorations.

BOND—provides durable and natural bond to gypsum basecoat.

COST—slightly higher than job-prepared finishes.

LIMITATIONS

1. Designed for application over gypsum basecoats only.
2. Should not be used on exterior surfaces where exposed to the elements or on interiors exposed to excessive moisture.

PLASTERING SPECIFICATIONS

The following should be included in Plastering Specifications:

Finish Coat shall be (RED TOP Gypsum Trowel Finish) or (RED TOP Gypsum Sand Float Finish) manufactured by United States Gypsum Company.

MIXING AND APPLICATION

Finish Coat—Prepared gypsum finish shall be mixed with water only in strict accordance with the manufacturer's directions.

Include whichever of the following paragraphs is applicable:

RED TOP Gypsum Trowel Finish shall be applied in 2 coats to a total thickness of not more than $\frac{1}{2}$ " over a set, half-green gypsum basecoat. Scratch in a thin coat and double back with a second coat, filling out to a true and even surface. Trowel to a smooth finish free of cat faces and other blemishes. Use water sparingly during troweling.

RED TOP Gypsum Sand Float Finish shall be applied in 2 coats to a total thickness of not more than $\frac{1}{2}$ " over a set, half-green gypsum basecoat. If the basecoat has dried out, it shall be sprayed with water, but not soaked, before the finish coat is applied. Scratch in a thin coat and double back with a second coat, filling out to a true and even surface. Float with a suitable tool to give a surface free from slick spots, cat faces and other blemishes. Use water sparingly while floating.

FINISHING PLASTERS

RED TOP COVER COAT FINISHING PLASTER

DESCRIPTION

RED TOP Cover Coat is a mill prepared white gypsum bonding-finish plaster requiring the addition of water only.

FUNCTION AND UTILITY

RED TOP Cover Coat is a specially prepared finishing plaster designed to furnish an adhesive bond in refinishing existing surfaces of old plaster, gypsum wallboard, textured finishes, whether painted or unpainted, or for application direct to smooth concrete (to which application of Bondcrete is not suited) and provide a finish surface ready for decoration.

LIMITATIONS

1. For interior application only.
2. Not recommended for application on exterior masonry walls which are not furred.
3. Not designed for use on surfaces which are exposed to excessive humidity or where frequent exposure to water is expected.
4. Do not apply over waxed or wax glazed surfaces.

SPECIFICATIONS

1. Under "Materials" of the plastering specification include the following:

Finish plaster over (existing surfaces as indicated) (smooth concrete ceiling, columns or beams) (specify) shall be RED TOP Cover Coat as manufactured by United States Gypsum Company.

2. Under "Mixing and Application" include the following:

Mix RED TOP Cover Coat with water only (except for final coat where sand float finish is desired the addition of 1½ parts silica sand to one part Cover Coat by weight is permissible). All surfaces to receive Cover Coat shall be properly prepared as specified elsewhere. Cover Coat shall be applied in two coats over a properly prepared surface. First coat shall be applied to a dry surface in sufficient thickness to cover and embed existing surface texture and imperfections and troweled level to receive second coat. Over set dry first coat apply second coat as thin as possible and after it takes up water trowel to a smooth finish.

3. A separate paragraph must be included as follows:

Surface Preparation: Old surfaces must be clean and sound. Scrape off high portions of heavy stipples. Wash all surfaces with commercial paint cleaner (not soap) removing dirt, oil and grease and rinse with clean water. Brush or wipe surface with 5% solution of zinc sulphate or alum and allow to dry. Patch holes and surface defects with paste of Cover Coat. Reinforce existing cracks by embedding 2" sized open mesh gauge reinforcing tape in a paste of Cover Coat tightly against the wall surface over the crack.

Over unpainted concrete remove all laitance or efflorescence by dry brushing and scrub surface with naphtha or mineral spirits to remove grease and form oil. Then brush or spray surface with 5% solution of zinc sulphate or alum in water to "kill" surface alkalinity and allow to dry.

ORIENTAL* INTERIOR (COLORED) FINISHES

DESCRIPTION

ORIENTAL Interior Finish is a mill-prepared and colored finish plaster requiring the addition of water only.

There are no ASTM or Federal Specifications covering this type of plaster.

FUNCTION AND UTILITY

INTEGRALLY COLORED at factory, requiring no decoration. Permits early occupancy. Avoids variations of color intensity that are possible when colors are mixed at site.

COLORS (with LIGHT REFLECTION for float finish). White—81.5%; Sahara Cream—74.6%; Ivory—77.5%; Tusk Ivory—72.7%; Harvest Buff—66.6%; Parchment—74.2%; Golden Buff—70.1%; Mist Gray—63.9%; Caenstone—51.4%; Shell Pink—64.8%; Desert Rose—56.2%; and Cool Green—67.4%.

TEXTURE—A finely floated surface or a textured finish—in 13 colors.

STRENGTH—highly resistant to abrasion due to very great hardness. See Technical Data, Page 8.

LIMITATIONS OF USE

1. ORIENTAL Interior is for producing finely floated surfaces or textures. Do not use for a smooth finish.
2. To be used on interiors only.

SPECIFICATIONS

The following should be included in plaster specifications given on pages 4 to 7.

MATERIALS

Finish Coat shall be ORIENTAL Interior Finish, manufactured by United States Gypsum Company. Color shall be as selected by the architect from schedule of colors furnished by manufacturer.

MIXING AND APPLICATION

Finish Coat—ORIENTAL Interior Finish shall be mixed with water only in accordance with the manufacturer's directions.

ORIENTAL Interior Colored Finish shall be applied over a set and half-green gypsum basecoat. (*Select one of following*):

Float Finish—Scratch in a thin coat and double-back with a second coat, filling out to a true and even surface. Surface shall be floated with a cork float to give a surface free of slick spots, cat faces and other blemishes. Do not use water while floating.

Texture Finishes—Textures shall be applied in such a manner that they will match the sample approved by the architect or his representative.

*Trademark Reg. U. S. Pat. Off.

FINISHING PLASTERS

SABINITE* ACOUSTICAL PLASTER FINISHES

SABINITE TROWEL FINISH "M"

DESCRIPTION

SABINITE Trowel Finish is a highly efficient acoustical plaster, scientifically prepared to produce a continuous *trowel finish* of exceptional sound absorbent qualities. It is manufactured in four standard colors and white and requires the addition of water only. Basically mineral, it is incombustible.

SABINITE FLOAT FINISH "F"

DESCRIPTION

SABINITE Float Finish is a highly efficient acoustical plaster which provides a *float finish* effect. Having a harder surface than SABINITE trowel finish, it is more suitable for side walls which require sound conditioning. It is

manufactured in four standard colors and white and requires the addition of water only.

SABINITE 38

DESCRIPTION

SABINITE 38 is an hydraulic acoustical plaster prepared for use in locations subjected to high moisture conditions. It is manufactured in white only, and provides a *float finish*.

SABINITE 38 is effective for sound conditioning in shower rooms, for ceilings in swimming pools, etc.

LIMITATIONS (All Types)

1. Designed for use on ceilings and areas not exposed to rough usage.
2. To insure best results, SABINITE must be applied in strict accordance with manufacturer's directions. (See AIA File 39-B for complete Technical Information and Specifications.)

EXTERIOR STUCCO FINISH

ORIENTAL* EXTERIOR (COLORED) FINISHES

DESCRIPTION

ORIENTAL Exterior Finish is a factory-prepared stucco for exterior application over a portland cement-lime basecoat. It requires the addition of water only on the job.

Colors: Pewter Gray, Eggshell Ivory, Sun Tan, Stone Gray, Copper Rose, Alamo Buff, Mission Green, Cascade Green, Pueblo Tan, Indian Coral, Rancho Brown and White.

FUNCTION AND UTILITY

FACTORY PREPARED—Uniformity in formulation insures endurance under all weather conditions. Avoids possibility of job-mixing errors.

INTEGRAL COLORING—Prevents variations possible where colors are added at site.

DECORATION—Requires none.

ADAPTABLE to any texture.

LIMITATIONS

1. Not designed for use as a smooth trowel finish.
2. Requires a portland cement-lime basecoat.

PLASTERING SPECIFICATIONS

GENERAL PROVISIONS

When exterior stucco is applied during cold weather, longer curing periods are necessary. In freezing weather, do not apply ORIENTAL Exterior Stucco unless special precautions are taken to keep the materials at a temperature above 50°F. during mixing and for at least 48 hours after application.

SCOPE

Unless otherwise shown on drawings, all exterior walls shall be finished as herein described.

MATERIALS

Exterior finish coat shall be ORIENTAL Exterior-colored finish as manufactured by the United States Gypsum Company. Color and texture to be designated and approved by the architect or his representative.

MIXING AND APPLICATION

ORIENTAL Exterior colored finish shall be mixed and applied in strict accordance with the manufacturer's directions.

*Trademark Reg U. S. Pat. Off.

EXTERIOR STUCCO BASECOAT

DESCRIPTION

Exterior stucco basecoat is prepared on the job from portland cement, lime, sand and water and is the basecoat that receives the ORIENTAL* Exterior (colored) Finish.

FUNCTION AND UTILITY

Exterior stucco basecoat is used for the scratch (first coat) and brown (second coat) over cement block or clay tile, or over sheathing to which STUCCO MESH or self-furring metal lath has been properly applied.

FIRE RESISTANT—Made from portland cement, lime and sand, it will not support combustion.

WEATHER RESISTANT—Suitable for normal exposure to climatic variations.

STRONG—Properly mixed and cured, it provides a dense, hard base that will withstand normal wear and usage.

ECONOMICAL—Use of standard, readily available materials provides a low cost basecoat.

LIMITATIONS OF USE

1. Because of the use of portland cement, each coat required curing with water after set.
2. Must not be applied in freezing weather or over bases containing frost.
3. Must not be used on smooth, dense surfaces or over old, unsound stucco unless stucco mesh reinforcement is first properly applied.

SPECIFICATIONS

(Note to Architect: The following specifications may be adapted to your requirements for interior portland cement-lime plaster.)

SCOPE

Unless otherwise specified or shown on the drawings, all exterior walls shall have a portland cement-lime stucco basecoat.

MATERIALS

Reinforcing mesh (where required) shall be USG STUCCO MESH applied with stucco furring nails or USG 3.4 lb. Self-Furring Diamond Mesh Metal Lath, applied with 1½" 11 gauge galvanized roofing nails. Nails to be spaced not over 6" on center vertically and 16" on center horizontally.

PORTLAND CEMENT—Shall comply with A.S.T.M. Designation C150-47.

LIME—Shall be MORTASEAL or RED TOP Masons Hydrate Lime or Quicklime as manufactured by the United States Gypsum Company.

SAND—Shall be clean and sharp and shall meet the requirements of American Standards Association specifications A-12-2.

WATER—Shall be clean, free from harmful quantities of organic matter and fit for domestic consumption.

FINISH—Shall be ORIENTAL Exterior (colored) Finish as manufactured by the United States Gypsum Company.

MIXING OF BASECOATS

The scratch (first coat) shall be mixed in the proportion of one bag of portland cement (one cubic foot); two bags of MORTASEAL (or two cubic feet of RED TOP Masons Lime Putty) and seven and one-half cubic feet of sand (approximately 45 No. 2 shovels). For application over stucco mesh or self-furring metal lath, approximately two pounds of fiber or hair shall be added to each mix of the above proportions.

The brown coat (second coat) shall be mixed in the proportion of one bag of portland cement, two bags of MORTASEAL (or two cubic feet of RED TOP Masons Lime Putty) and nine cubic feet of sand (approximately 55 No. 2 shovels).

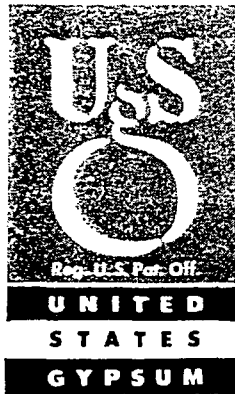
APPLICATION

Scratch coat shall be applied in a full ¾" coat, with sufficient pressure to form a good bond with masonry surfaces or to force it through and completely embed the stucco mesh. Cross scratch and, after set, damp cure for not less than 48 hours.

Brown coat shall be applied over the dampened scratch coat in a full ¾" coat with sufficient pressure to form a good bond, rodged level and left rough, using a broom if necessary. After set, damp cure for at least 48 hours before applying the finish (third) coat.

CURING

Damp curing of each coat shall be accomplished by applying water in a fine, fog spray. Apply only as much water as is readily absorbed. The frequency of spraying required will depend on the weather exposure, more frequent applications being required during hot, dry and windy weather.



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