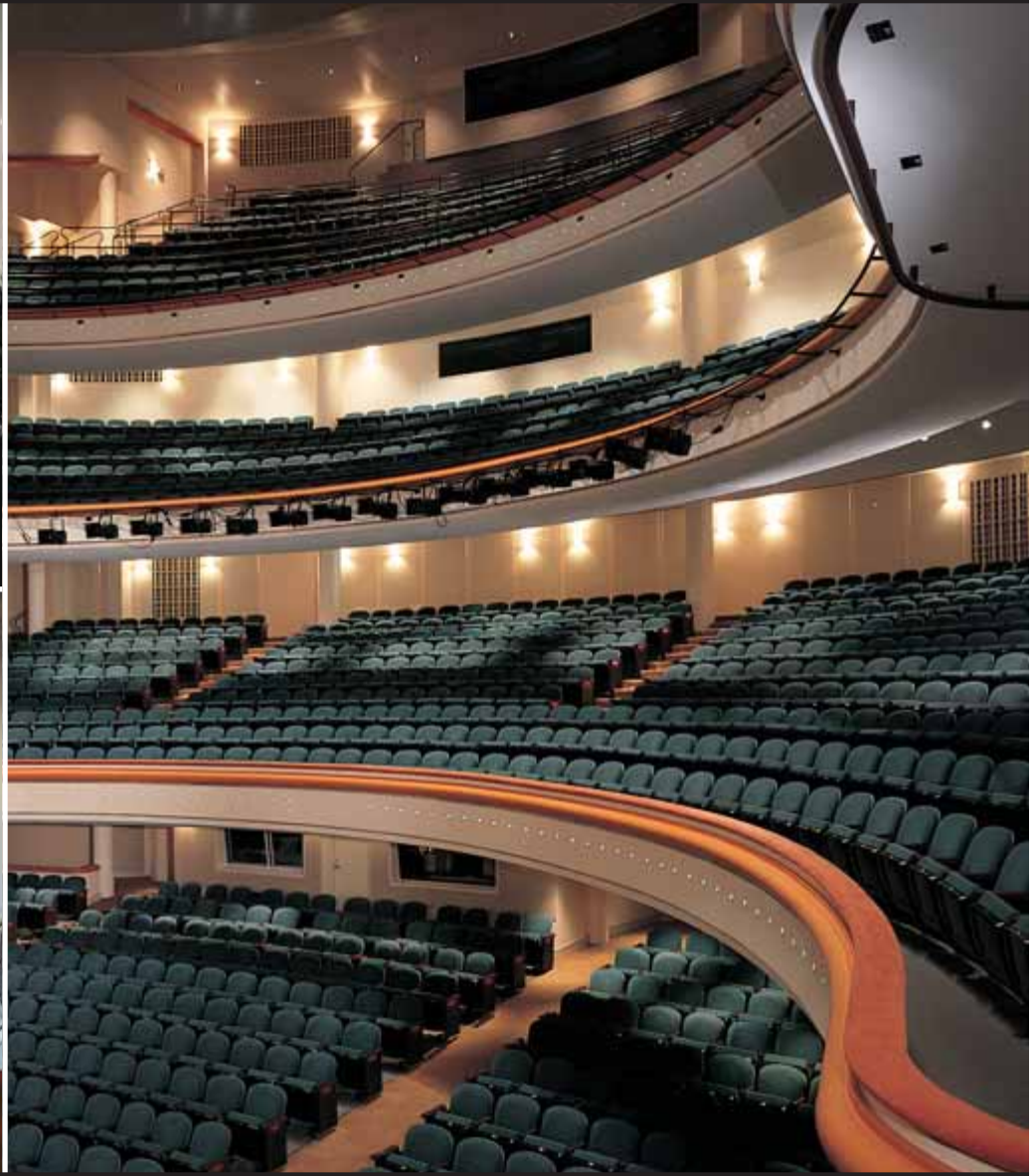


Gold Bond[®] BRAND

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Plaster Resource Manual



**Gold
Bond[®]**
BRAND
Gypsum Board

National 
Gypsum[®]

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How to use this Manual

Designed for contractors, architects and specifiers, this useful manual contains a broad range of helpful information about our lath and plaster systems and veneer plasters.

Since conventional lath and plaster differs from veneer plaster, we've simplified the manual by dividing it into two distinct sections.

The first section contains descriptions of our gypsum plaster systems including lath, metal accessories and plasters. You'll also find construction recommendations to help you get the most from this conventional finish.

The second section, devoted to veneer plaster, features descriptions of our products including Uni-Kal®, X-KALibur® and Kal-Kote®, along with a comparison of one-coat and two-coat systems.

In both sections, we look at unique conditions common to plaster finishes, and we recommend solutions to these problems.

We've even included a glossary of plaster terms and definitions.

For technical inquiries, contact our Technical Services Department at 1-800-NATIONAL (628-4662), or fax 1-800-FAX-NGC1 (329-6421). You can also access our Internet home page at nationalgypsum.com or nationalgypsum.com/espanol.

Note: Further information on our plaster products is available in National Gypsum Company's *Gypsum Construction Guide*.



Description

Conventional gypsum lath and plaster systems have long been considered the industry standard in wall construction.

Ideal for both residential and commercial applications, lath and plaster systems provide smooth, high quality wall surfaces, regardless of framing alignment.

Lath and plaster deliver exceptional beauty and durability in interior partitions and non-loadbearing exterior walls. Conventional plaster systems are also commonly used as the panel material for radiant heating systems in ceilings.

When used with expanded metal lath, conventional plasters create a mechanical bond for maximum strength and durability. Gypsum plasters are also excellent for sculpting, casting decorative objects, and historic restoration.

General Uses

Gypsum plaster systems are suitable for all interior plastering except areas directly exposed to free water or severe moisture. Lath and plaster is not recommended for exterior applications such as carports, soffits and open porches.

Gypsum plasters are non-combustible and act to prevent passage of intense heat from fire for extended periods. For specific fire resistance ratings, see National Gypsum's *Gypsum Construction Guide*.

Features/Benefits

- Provides a smooth, high quality surface
- Requires no joint taping and finishing
- Resists nail pops better than gypsum wallboard
- Enhances overall wall strength
- High impact and abrasion resistance
- Masks framing components and mechanical service areas

Selecting Plaster Bases

National Gypsum Company manufactures all of the most common types of gypsum base plaster and finishing plaster.

These products perform well in appearance, structural ability, sound isolation and fire endurance ratings, allowing architects to design virtually any number of ceilings and partitions.

Performance

The relative performance of gypsum and metal lath varies depending on the type of construction. When plaster on metal lath forms a membrane, as in a suspended ceiling or hollow partition, it's more subject to cracking than plaster on gypsum lath. On solid partitions, metal lath is generally less subject to plaster cracking than gypsum lath.

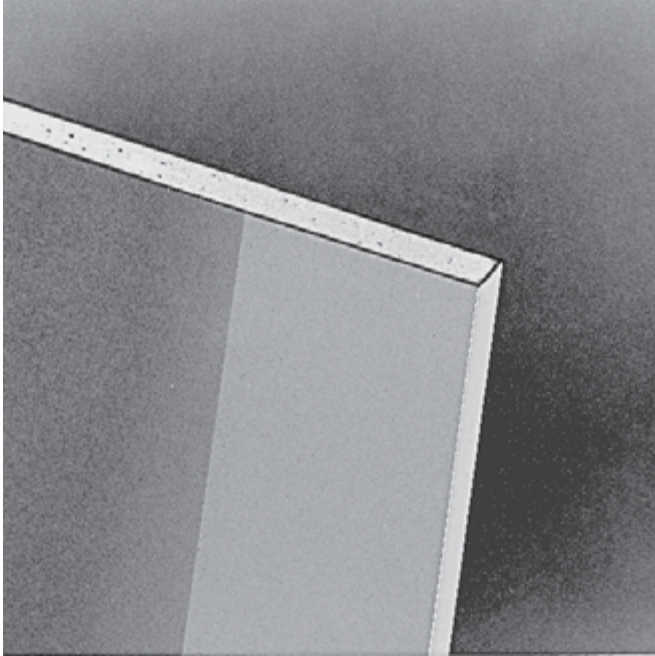
Recommendations

- Control joints should be installed in ceilings without perimeter relief with a maximum distance between joints of 30' with a maximum undivided area of 900 sq. ft. With perimeter relief, the maximum distance between joints is 50' with a maximum undivided area of 2500 sq. ft. On side walls, control joints should be installed every 30'.
- Where dissimilar plaster bases adjoin, use strip-metal lath with 15 lb. felt paper between the metal lath and underlying base.
- Carefully inspect all lath and furring before plastering to ensure adherence to job specifications and good practice standards.
- Select from the suggested specifications that accompany the description of each system.

PRODUCT SHELF LIFE	
Product	Storage/ Shelf Life
Two-Way Hardwall	3 months
Gypsolite® Plaster	3 months
Gauging Plaster	3 months
Molding Plaster	3 months

Gypsum Plaster Base and Metal Lath

Kal-Kore® BRAND Plaster Base



Description

Kal-Kore® BRAND is a tapered edge gypsum wallboard plastering base having a blue absorptive face paper surface. Although specifically designed as a base for veneer plaster, it also provides an excellent base for conventional basecoat plasters such as Gypsolite or Two-Way Hardwall.

Technical Data

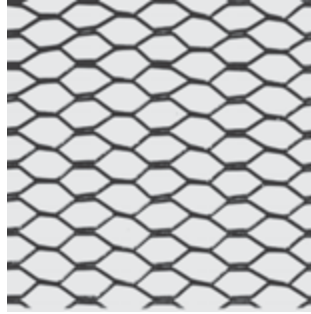
Kal-Kore is available in two basic types: Regular and Fire-Shield Type X. Kal-Kore is 4' wide and is supplied in 8' through 16' lengths. Thicknesses are as follows:

Regular: 3/8" and 1/2".

Fire-Shield: 1/2" Fire-Shield G, 5/8" Fire-Shield, 5/8" Fire-Shield G, produced to meet ASTM C 588/C 1396.

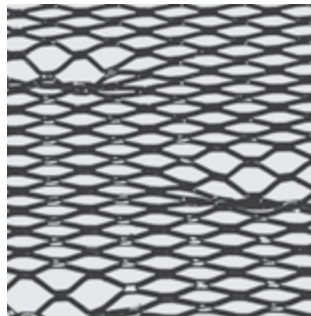
Note: Installation of gypsum lath and metal lath shall be in accordance with ASTM C 841. Do not use 3/8" Kal-Kore Plaster Base with conventional basecoat plasters.

Metal Lath Products*



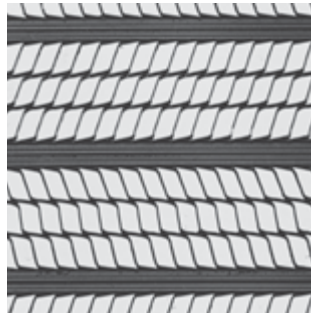
DIAMOND MESH LATH

Used as a plaster base and reinforcement on almost all types of walls and ceilings, over wood or steel framing, flat or curved surfaces.



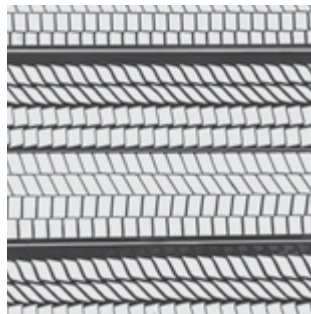
SELF-FURRING DIAMOND MESH LATH

Used extensively in stucco work, as a plaster reinforcement over interior masonry walls, and in steel column fireproofing. The self-furring dimples hold the metal lath 1/4" away from the surface to be plastered.



1/8" FLAT RIB LATH

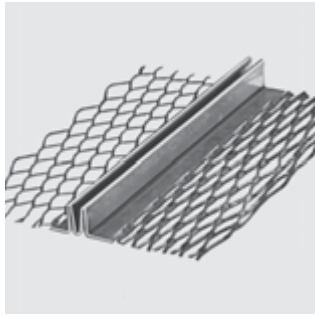
Designed to meet the demand for rigid expanded metal lath used as a plaster base in all types of work. Widely used as reinforcement for basecoat in ceramic tile work.



3/8" RIB LATH

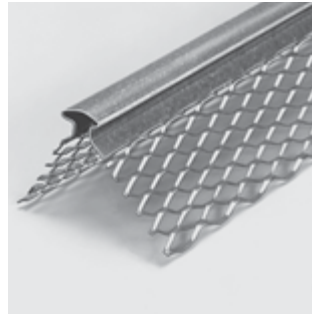
The 3/8" rib lath is used for ceilings under steel joist construction and metal reinforced concrete floors. It is also recommended for concrete slab floors over steel joists.

Conventional Plaster Accessories*



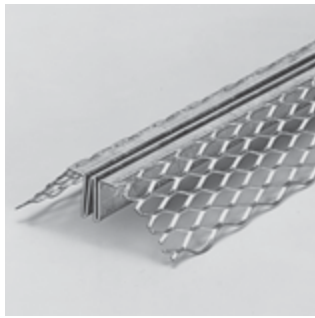
DOUBLE V EXPANSION JOINT

Minimizes cracking in large plaster areas. Also provides ground to assure proper plaster or stucco thickness.



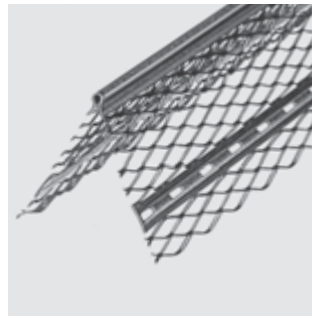
BULL NOSE CORNERBEAD

Reinforces exterior corners where rounded edges are required. Nose 3/4" radius. Galvanized steel.



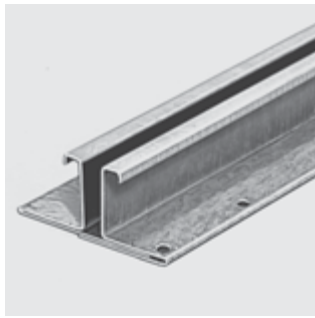
DOUBLE V CORNER EXPANSION JOINT

Similar in design to Double V expansion joint but preformed to fit corner angles. Galvanized steel or zinc.



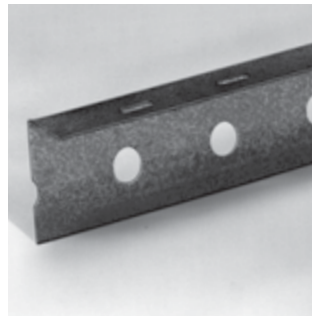
WIDE FLANGE EXPANDED CORNERBEAD

Has 3-3/16" expanded flanges for use on masonry, beams and for column fireproofing. Galvanized steel.



EXPANSION JOINT

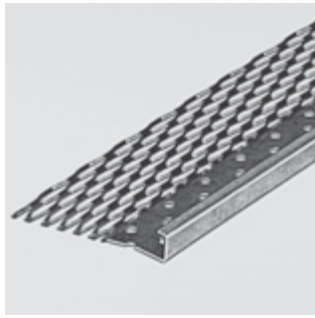
Designed to relieve stresses in large gypsum and portland cement plaster areas. Material will expand and contract to allow for 1/8" to 5/8" opening. Incorporates a weather resistant joint. Galvanized steel or zinc.



L RUNNER

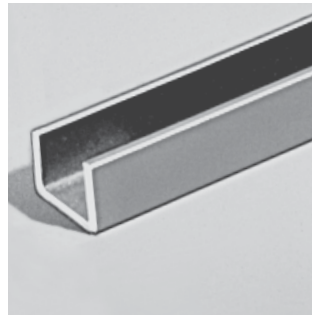
Perforated – Ceiling or floor support for 2" solid lath and plaster partition.

Plain – Ceiling support for 2" solid wallboard partition using 1" shaftliner.



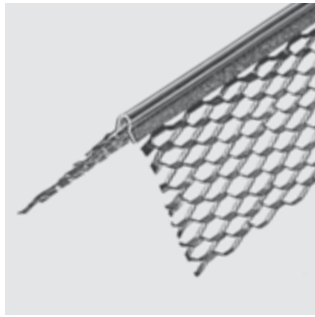
EXPANDED FLANGE SQUARE CASING

Has short, 90 degree return at plaster surface, serving as a plastering stop.



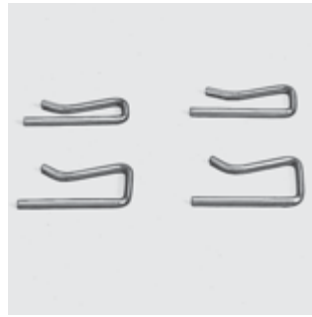
COLD ROLLED STEEL CHANNEL

Used as studs for attaching metal lath in 2" solid partitions. For furring or runners in suspended ceilings.



EXPANDED CORNERBEAD

The 2-1/2" expanded flange ends 1/4" from the nose of the bead providing reinforcement where needed most.



BEAM FURRING CLIP

Used to attach lath to flanges of steel beams, joists and columns. Tempered spring steel.

* Metal products are not manufactured by National Gypsum Company.

Basecoat Plasters

Gold Bond® BRAND Two-Way Hardwall Gypsum Plaster

Description

Gold Bond® Two-Way Hardwall Plaster is a basecoat plaster which requires the job site addition of an aggregate and water to provide working qualities and is designed for interior use over all accepted plaster bases. It may be applied by hand or used through pump/ spray plastering machines.



Strength

Two-Way Hardwall Plaster properly proportioned with aggregate forms a hard, durable base for the finish coat. Its high tensile and compressive strength results in increased resistance to minor structural movements, impacts and abrasions.

Fire Resistance

Two-Way Hardwall Plaster is essentially mineral in composition and will not support combustion.

Features/Benefits

Controlled Uniformity

Two-Way Hardwall Plaster is set-stabilized and adjusted for market requirements and seasonal changes. When mixed with sand or other aggregate it has uniform working qualities and excellent spread.

Technical Data

AGGREGATE PROPORTION AND ESTIMATED COVERAGE				
Aggregate Proportions	Plaster Base	Coverage, Sq. Yds. /Ton (Sq. M./Metric Ton)	Sq. Ft. (Sq. M.) per Bag	Thickness In. (mm)
Sanded 1:2-1/2	Gypsum Lath	175-220 (161-203)	80-100 (7-9)	7/16" (11.1)
Sanded 1:2-1/2	Gypsum Foil Back Lath	175-220 (161-203)	80-100 (7-9)	7/16" (11.1)
Sanded 1:2-1/2	Metal Lath	90-125 (83-115)	40-55 (4-5)	9/16"* (14.3)*
Sanded 1:3	Brick & Clay Tile Concrete Block	175-220 (161-203)	80-100 (7-9)	9/16" (14.3)

*Measured from face of lath.

NOTE: Sanded 1:2-1/2 means 1 part plaster to 2-1/2 parts sand by weight.

WEIGHT COMPARISON OF BASECOAT PLASTERS		
Dry Set Mortar Weight	Sanded 1:3	Gypsolite
Weight lbs. per cu. ft. (kg/m ³)	120 (1922)	50 (801)
Lbs./yd. ² (kg/m ²) 3/8" (9.5 mm) thick	34 (18)	14 (8)
Lbs./yd. ² (kg/m ²) 1/2" (12.7 mm) thick	45 (24)	19 (10)
Lbs./yd. ² (kg/m ²) 5/8" (15.9 mm) thick	56 (30)	24 (13)
Lbs./yd. ² (kg/m ²) 3/4" (19.0 mm) thick	67 (36)	29 (16)
Wet Mortar Weight		
Weight lbs. per cu. ft. (kg/m ³)	140 (2243)	69 (1105)

Specification Reference

ASTM Designation C 28, "Gypsum Plasters".

Bag Weight

100 lbs. (45.4 kg)

Gold Bond® BRAND Gypsolite® Plaster

Description

Gold Bond® Gypsolite® is a light-weight gypsum basecoat plaster mixed at the mill with correctly sized and proportioned perlite aggregate, requiring only the addition of water on the job. It is manufactured to be trowel-applied over gypsum plaster base, and in some cases metal lath (see LIMITATIONS.)



High Insulating Value

Gypsolite has a "k" factor of 1.5 which provides about 3-1/2 times the insulating value of sanded plaster.

Fire Resistance

Gypsolite has excellent fire-resistive qualities and generally provides fire ratings higher than sanded plaster.

Limitations

When used over metal lath, a sand float finish should be specified. A smooth-trowel finish is not recommended since the combination of a relatively soft (perlite aggregated) basecoat and a hard (smooth-trowel lime/gauging) finish has the potential for cracking and spalling of the finish coat.

Features/Benefits

Uniform Strength and Hardness

Uniformity is assured through exact proportioning and thorough mixing of graded perlite and gypsum plaster at the mill. Gypsolite provides a uniform base for the finish coat.

Lightweight

Gypsolite weighs less than half as much as sanded gypsum plaster, thus reducing the dead-load on framing.

Technical Data

GYPSOLITE ESTIMATED COVERAGE			
Plaster Base	Coverage, Sq. Yds. per Ton (Sq. M./Metric Ton)	Sq. Ft. (Sq. M.) per Bag	Thickness In. (mm)
Gypsum Lath and Gypsum Foil Back Lath	140-155 (129-143)	50-55 (4-5)	7/16" (11.1)
Metal Lath	65-80 (60-74)	25-30 (2-3)	9/16"* (14.3)*

*Measured from face of lath.

Specification Reference

ASTM Designation C 28, "Gypsum Plasters".

Bag Weight

80 lbs. (36.3 kg)

25 lbs. (11.3 kg)

Finish Plasters

PHYSICAL PROPERTIES OF BASECOAT PLASTERS (TYPICAL TEST RESULTS PER ASTM C 472)								
Plaster Properties	Gypsolite Regular	Two-Way Hardwall to Sand by Weight			Two-Way Hardwall and Vermiculite		Two-Way Hardwall and Perlite	
		Mill Mix	1:1	1:2	1:3	Regular	Masonry	Regular
Mix	Mill Mix	1:1	1:2	1:3	100 lbs. (45.4 kg) 2 cu. ft. (.06 m ³)	100 lbs. (45.4 kg) 3 cu. ft. (.08 m ³)	100 lbs. (45.4 kg) 2 cu. ft. (.06 m ³)	100 lbs. (45.4 kg) 3 cu. ft. (.08 m ³)
Approximate Compressive Strength lbs. per sq. in. (kPa)	900 (6201)	1600 (11024)	1150 (7923)	750 (5168)	500 (3445)	300 (2067)	900 (6201)	650 (4479)
Approximate Tensile Strength lbs. per sq. in. (kPa)	160 (1102)	250 (1722)	190 (1309)	120 (827)	130 (896)	90 (620)	160 (1102)	100 (689)

Gold Bond® BRAND Gypsum Gauging Plaster (Super White)

Gold Bond Gauging Plaster, quick set or slow set type, is designed for use with finish lime. It is specially ground, calcined gypsum, which readily mixes with water and lime putty. Proper proportioning is essential, since gauging adds strength and hardness to the finish surface by reinforcing the plastic non-setting lime against shrinkage and cracking. A finish coat of gypsum gauging plaster and finish lime, job mixed 2 parts hydrated lime to 1 part plaster by weight, is designed primarily for interior smooth trowel application over a



gypsum plaster basecoat. Smooth finish plasters should be applied at a thickness of not more than 1/16". Texture finishes should be applied at a thickness of not more than 1/8".

Specification Reference
Complies with ASTM Designation C 28.

Technical Data

GYPSUM GAUGING PLASTER	
Method of Application	Coverage*
Trowel Finish	1000-1400 sq. yds./Ton (921-1290 m ² /Metric Ton) 225-315 sq. ft./Bag (21-29 m ² /Bag)

*Based on one part plaster to two parts hydrated lime.

Bag Weight

Quick Set: 100 lbs./45.4 kg
(50 lb./22.7 kg bags available in limited areas)

Slow Set: 100 lbs./45.4 kg
(50 lb./22.7 kg bags available in limited areas)

Mill-Mixed Finish Plasters

For a mill-mixed finish plaster, use Kal-Kote Smooth Finish, Kal-Kote Texture Finish Plaster, Uni-Kal Veneer Plaster or X-KALibur

Extended Set Veneer Plaster. Requires the addition of water only. See page 17.

MILL-MIXED FINISH PLASTERS*		
Product	Method of Application	Coverage*
Kal-Kote Smooth Finish	Trowel	650-750 sq. yds./Ton (598-645 m ² /Metric Ton)
Kal-Kote Texture Finish	Trowel	650-750 sq. yds./Ton (598-645 m ² /Metric Ton)
Uni-Kal and X-KALibur	Trowel	600-665 sq. yds./Ton (553-613 m ² /Metric Ton)

*See page 17 for additional information.

Gold Bond® BRAND Gypsum Moulding Plaster (Super White)

Gold Bond Moulding Plaster is a very white, finely ground gypsum, primarily used for all kinds of ornamental plaster work. Because of its low expansion, excellent strength and hardness, it is specially adaptable for casting in rubber, gelatin and other types of moulds. For casting purposes, only water is added. For run-in-place ornamental work, such as cornices, the moulding plaster is used with lime putty, mixed 2 parts lime to 1 part moulding plaster by weight.



Specification Reference
Complies with ASTM Designation C 59.

Note: Application of plaster shall be in accordance with ASTM C 842.

Technical Data

GYPSUM MOULDING PLASTER	
Method of Application	Coverage*
Trowel Finish	1000-1400 sq. yds./Ton (921-1290 m ² /Metric Ton) 225-315 sq. ft./Bag (21-29 m ² /Bag)

*Based on one part plaster to two parts hydrated lime.

Bag Weight

100 lbs./45.4 kg (50 lbs./22.7 kg bags available in limited areas)

Lath & Plaster Problems and Solutions

Conditions/Causes/Prevention/Correction

Plaster problems are rarely caused by a gypsum plaster product deficiency. In general, most conventional plaster construction problems can be classified into one of the following categories.

- Cracks*
- Surface defects, blemishes, stains
- Weak or soft plaster
- Bond failure
- Finish coat problems
- Working qualities and setting action
- Painting plaster

The cause(s) of these generally are the result of:

- Conditions relating to plaster set
- Poor quality or incorrect proportioning of aggregate
- Structural movement
- Improper mixing, application or thickness of basecoat or finish
- Incorrect or improper lathing or substrate
- Dirty mixing equipment

- Environmental job conditions
- Poor or improper plastering practices and workmanship

**Conventional plaster, although not considered to be a structural member, is not delicate construction and can endure considerable abuse without cracking. However, cracks can occur when excessive external forces caused by structural or component movement over which the plaster is applied are transmitted to the plaster or by extreme environmental changes.*

Condition	Construction	Probable Cause	Preventive Action	Corrective Action
CRACKS				
Connected Vertical And Horizontal Cracks Occurring At Somewhat Regular Intervals, Usually In A Stepped Or Grid Pattern	Plaster applied over gypsum or metal lath.	<ol style="list-style-type: none"> 1. Plaster too thin. 2. Weak plaster (too much or improper aggregate.) 3. Lath improperly applied. 	Properly install lath, use properly sized and proportioned aggregate and apply plaster to the required thickness.	<ol style="list-style-type: none"> 1. Apply another coat of plaster to proper thickness. 2. Remove defective plaster work and replace with properly proportioned plaster. 3. Check Lathing Specifications, remove and reapply lath properly and replaster.
Cracks Around And Over Openings Such As Doors Or Windows	Plaster over masonry, cement block, gypsum tile or gypsum, wood or other sheet lath.	<ol style="list-style-type: none"> 1. Poor construction of lintel, door bucks improperly constructed or installed. 2. Plaster too thin. 3. Failure to use reinforcing. 4. Expansion of wood or metal framing. 5. Weak plaster, too much aggregate. 	Follow proper construction installation practices.	<ol style="list-style-type: none"> 1. Patch cracked areas. 2. Apply coat of plaster to proper thickness. 3. Remove plaster and provide expanded metal reinforcement and replaster. 4. Remove plaster, provide control joints, replaster. 5. No correction – remove and replaster.
Fine Cracks Occurring In A Random Pattern Usually Less Than 6" Apart. Shrinkage Cracks, Crazying, Alligatoring, Chip Cracks	<ol style="list-style-type: none"> 1. Basecoat over masonry, cement block, etc. 2. Lime putty finish over gypsum basecoat. 	<ol style="list-style-type: none"> 1. Basecoat too rich, insufficient aggregate. 2. Basecoat too dry when finish applied – excessive suction. 3. Insufficient or slowset gauged finish. 4. Finish applied too thick. 5. Insufficient troweling of finish. 	Follow proper plastering practices.	<ol style="list-style-type: none"> 1. Remove plaster and redo properly. 2. Prepare basecoat by spraying with water to decrease suction. 3. Strip finish, replaster with proper gauging. 4. Strip finish and correctly refinish. 5. Strip finish and tightly scratch, apply 1/32" - 1/16" thick.
Random Cracks In Wall Or Ceiling, Generally Running Full Length Of Wall Or Width Of Ceiling. May Adjoin Other Cracks And Are Generally Widely Spaced	Plaster over any substrate.	Structural movement.	Use a properly designed and installed construction such as a suspended or floating plaster system.	<p>Repair cracks.</p> <p>Large Cracks: Remove plaster about 6" on each side of the crack down to the substrate. Place a strip of metal lath in the cleared area, wet with water and replaster.</p> <p>Small Cracks: Open the crack slightly, wet and fill flush with a setting type joint compound.</p>

Condition	Construction	Probable Cause	Preventive Action	Corrective Action
CRACKS (cont.)				
Cracks At Wall Or Ceiling Angles	<ol style="list-style-type: none"> 1. Plaster over gypsum lath. 2. Plaster over masonry. 	<ol style="list-style-type: none"> 1. a. Thin plaster. b. Failure to use expanded metal reinforcement. c. Structural movement. 2. Failure to tie walls together. 	<ol style="list-style-type: none"> 1. a. Be sure proper plastering grounds are in place. b. Always apply expanded metal reinforcement in all interior angles. c. Follow proper construction practices. 2. Follow proper construction practices. 	<ol style="list-style-type: none"> 1. a. Apply second coat of plaster to proper thickness. b. Cut out plaster and patch. c. Patch cracks. 2. Patch cracks.
Cracks Not Due To Any Of The Previously Mentioned Causes And Are Not The Result Of Structural Movement	<ol style="list-style-type: none"> 1. Plaster over metal or gypsum lath. 2. Plaster over metal or gypsum lath on steel framing. 	<ol style="list-style-type: none"> 1. a. Metal lath too light. b. Metal lath not lapped or properly tied. c. Thermal shock. 2. a. Improper spacing of framing members. b. Thermal shock. 	Follow proper construction practices.	<ol style="list-style-type: none"> 1. a/b. Remove lath and plaster, apply proper weight lath and replaster. c. Patch cracks. 2. a. Remove plaster, properly space framing and replaster. b. Patch plaster.
SURFACE DEFECTS				
Fuzz (Efflorescence) On Surface, White Or Colored, Is Water Soluble And Can Be Removed By Brushing	Basecoat or finish coat over masonry or concrete substrate.	Efflorescence – water soluble salts are deposited on the surface of the plaster as the masonry or concrete dries.	Fur wall away from the masonry or concrete prior to plastering.	Eliminate the source of moisture.
Streaky Discoloration	Lime putty finishes gauged with gauging plaster or Keene's cement.	<ol style="list-style-type: none"> 1. Use of too much water while troweling. 2. Improperly/poorly mixed lime and gauging material. 3. Dirty tools, water, or mixing equipment. 4. Efflorescence. 	<ol style="list-style-type: none"> 1. Use proper amount of water while troweling. 2. Thoroughly mix the lime and gauging. 3. Use only clean tools, mixing equipment and water. 4. See prevention for FUZZY surface. 	<ol style="list-style-type: none"> 1–3. Paint plastered surfaces with a good quality paint as recommended by the paint manufacturer. 4. See correction for FUZZY surface.
Streaked Finish, Joinings Showing, Dirty Areas	Finish plaster over any substrate.	<ol style="list-style-type: none"> 1. Too much water used while troweling. 2. Use of dirty water during troweling. 	Use only the proper amount of clean water during troweling.	Prime and paint surface with a good quality paint as recommended by the paint manufacturer.
Blisters On Finish Coat (Entrapped air between finish and substrate)	Gauged lime putty or mill mixed gypsum plaster trowel finishes.	<ol style="list-style-type: none"> 1. Basecoat too green (wet). 2. Insufficient suction. 3. Too much water used while troweling. 4. Insufficient gauging. 5. Troweling before sufficient take-up. 	<ol style="list-style-type: none"> 1/2. Allow basecoat to dry sufficiently to develop proper suction. 3. Dash water on surface sparingly during troweling. 4. Use proper proportions of lime putty and gauging. 5. Allow plaster to take-up sufficiently before troweling. 	Remove blistered finish and replaster.
Projections On Surface Which Fall Out Leaving Craters Or Pits. May Have Fine Cracks Radiating From The Center	Finish or basecoat plasters containing lime.	Unslaked lime or foreign matter in the plaster which hydrates and expands after application.	Use Type S hydrated lime or properly soak lime to insure proper hydration.	Remove the core of the crater or pits and patch with finish plaster or ready mix joint compound.

Condition	Construction	Probable Cause	Preventive Action	Corrective Action
WEAK OR SOFT PLASTER				
Soft, White, Chalky Surface	Basecoat over any plaster base.	Usually occurring during dry, hot weather. Too much ventilation has removed water from the plaster before it has set. Called "dry-out".	Screen openings to minimize drafts during dry, hot weather and spray the surfaces and floors with water during the setting period.	Spray dried out areas with water or a solution of alum (1 lb. alum per 3 gallons of water).
Soft, Dark, Damp Plaster Surface	Basecoat over any substrate.	<ol style="list-style-type: none"> 1. DAMP WEATHER - too little ventilation during damp weather, water remaining in plaster too long after set has occurred, "Sweat-Out". 2. FREEZING WEATHER CONDITIONS – FROZEN PLASTER 	<ol style="list-style-type: none"> 1. Maintain proper heating and ventilating prior to, during and after plastering. 2. Maintain minimum 55°F prior to, during and after plastering and provide adequate ventilation until plaster is dry. 	<ol style="list-style-type: none"> 1. Dry plaster by ventilating and heating. If condition has existed for too long it cannot be corrected. Plaster must be removed and replastered. 2. Close building, heat building until plaster sets and continue heating and ventilating after set.
Weak, Soft Plaster, Due To Improper Proportioned Aggregate	Gypsum basecoat over any plaster base.	<ol style="list-style-type: none"> 1. Too fine or poor aggregate grade. 2. Too much aggregate. 	Use only aggregate meeting ASTM specification. Properly proportion aggregate and plaster.	No correction – remove the plaster and replaster.
BOND FAILURE OF BASECOAT				
Separation Of Basecoat From Gypsum Lath	Basecoat over gypsum lath.	<ol style="list-style-type: none"> 1. Too much or improper aggregate used. 2. Frozen plaster. 	<ol style="list-style-type: none"> 1. Use only proper and ASTM-specified plaster/ aggregate proportions. 2. Maintain a minimum temperature of 55°F in the building prior to, during and after application and provide adequate ventilation. 	No correction – remove the plaster and replaster.
Separation Of Basecoat From Metal Lath	Basecoat over metal lath.	<ol style="list-style-type: none"> 1. Too much or improper aggregate. 2. Frozen plaster. 3. Scratch coat too thin. 	<ol style="list-style-type: none"> 1. Use only proper and ASTM-specified plaster/ aggregate proportions. 2. Maintain a minimum temperature of 55°F in the building prior to, during and after application and provide adequate ventilation. 	No correction – remove the plaster and replaster.
Separation Of Basecoat From Unit Masonry	Basecoat over unit masonry.	<ol style="list-style-type: none"> 1. Excessive suction of the masonry base. 2. Masonry base has a non-absorbent or glazed surface. 3. Efflorescence present on the masonry base. 	<ol style="list-style-type: none"> 1. Dampen the masonry to reduce suction. 2. Roughen the masonry surface to provide a key for the plaster. 3. Eliminate the source of moisture causing the efflorescence. Fur away from the masonry surface and apply lath over the furring. 	No correction – remove the plaster and replaster.

Condition	Construction	Probable Cause	Preventive Action	Corrective Action
BOND FAILURE OF BASECOAT (cont.)				
Separation Of Gypsum Plaster From Monolithic Concrete Surface	Basecoat over monolithic concrete.	Concrete bonding agent not applied.	Apply plaster bonding agent per ASTM specification – before application of plaster.	No correction – remove the plaster and replaster.
Brown Coat Plaster Separating From Scratch Coat Plaster	Three-coat plaster work.	<ol style="list-style-type: none"> 1. Weak scratch coat plaster. 2. Failure to provide adequate mechanical keying to scratch coat. 	<ol style="list-style-type: none"> 1. See preventive actions under weak, soft plaster. 2. Do not over trowel scratch coat; rake or broom scratch coat to provide mechanical keying. 	No correction – remove the plaster and replaster.
FINISH COAT PROBLEMS				
Gauged Lime Putty Finish Coat Separating From Brown Coat Plaster	Gauged lime finish over basecoat.	<ol style="list-style-type: none"> 1. Brown coat too weak, too smooth, too wet (too little suction) or too dry (too much suction). 2. Finish applied improperly. 3. Incomplete hydration of finish lime. 	<ol style="list-style-type: none"> 1. Make sure brown coat is properly prepared to receive finish. 2. Apply finish, taking precautions to follow recommended practices. 3. Use only Type S hydrated lime and mix according to recommendations. 	<ol style="list-style-type: none"> 1. No correction – remove finish coat, correct condition of brown coat and replaster. 2/3. No correction – remove finish coat and replaster.
Gypsum Sand Float Or Trowel Finish Separating From Brown Coat	Gypsum sand finish over basecoat.	<ol style="list-style-type: none"> 1. Brown coat too weak. 2. Brown coat too dry. 3. Brown coat too smooth. 	Make certain that the brown coat is sound, not overly dry and has adequate roughness to provide keying to the finish.	<ol style="list-style-type: none"> 1. No correction – remove finish, correct brown coat condition and replaster. 2. No correction – remove finish, spray brown coat with water to reduce suction and replaster. 3. No correction – remove finish, roughen brown coat to provide adequate keying and replaster.
Finish Coat Weak, Soft	Gypsum finish over basecoat.	<ol style="list-style-type: none"> 1. Insufficient gauging plaster used. 2. Retempered finish coat. 3. Inadequate or insufficient troweling of the finish. 	<ol style="list-style-type: none"> 1. Use proper proportions of gauging to lime putty. 2. Do not retemper plaster that has started to set. 3. Lime putty finishes must be troweled sufficiently to densify the finish and develop proper strength. 	No correction – remove the plaster and replaster.
Lime/Gauging Finish – Tough, Short Working Or Lumpy Lime Putty	Gauged lime finish over basecoat.	<ol style="list-style-type: none"> 1. Old material, warehoused too long or improperly. 2. Lime improperly mixed or soaked. 3. Low temperatures. 	<ol style="list-style-type: none"> 1. Use only fresh lime which has been properly warehoused. 2. Mix and/or soak lime according to supplier's recommendations. 3. Maintain proper temperature above 55°F prior to, during and after plastering. 	There is no correction for these occurrences.
Set Not Uniform	Gypsum finish over basecoat.	<ol style="list-style-type: none"> 1. Improper gauging plaster used. 2. Temperature conditions too hot or cold. 	<ol style="list-style-type: none"> 1. Use either Quick or Slow set gauging in the proper proportions. 2. Maintain proper temperature above 55°F prior to, during and after plastering. 	There is no correction for these occurrences.

Condition	Construction	Probable Cause	Preventive Action	Corrective Action
FINISH COAT PROBLEMS (cont.)				
Finish Coat Works Hard	Gypsum finish over basecoat.	<ol style="list-style-type: none"> 1. Basecoat plaster too dry. 2. Finish coat mixed too stiff. 	Follow good plastering practices.	<ol style="list-style-type: none"> 1. Apply finish coat over green base or spray the dry base lightly with water before finishing. 2. Use correct amount of water when mixing finish coat.
WORKING QUALITIES AND SETTING ACTION				
Slow Plaster Sets – Not Set After Five Or Six Hours	Basecoat plaster over any substrate.	<ol style="list-style-type: none"> 1. Retarding action of aggregate. 2. Retarding action of water being used. 3. Old plaster set lengthened due to aging. 	Use only proper plaster aggregate, potable water and fresh plaster.	<ol style="list-style-type: none"> 1/2. Obtain good sand and water or accelerate mixes. 3. Replace with fresh plaster or accelerate mixes.
Plaster Sets Too Quickly To Be Darbied Or Sets In Mortar Box Or On The Board	Basecoat plaster over any substrate.	<ol style="list-style-type: none"> 1. Tools and mixing equipment not free of set plaster. 2. Dirty or contaminated sand or water. 3. Plaster too old or became wet in storage or on the job site. 4. Plaster being mixed too long. 	Keep tools and mixing equipment clean, use only potable water and clean sand for mixing. Use fresh plaster which has been stored properly. Follow good plastering practices.	<ol style="list-style-type: none"> 1–3. Judiciously use retarder to slow setting, clean equipment and obtain clean water and sand. 4. Reduce plaster mixing time.
Plaster Works Hard Or Short, Will Not Spread, Will Not Carry Proper Amount Of Aggregate	Basecoat plaster over any substrate.	<ol style="list-style-type: none"> 1. Plaster is old or stored under poor conditions. 2. Too much or improper aggregate being used. 	Use only fresh, properly stored plaster.	<ol style="list-style-type: none"> 1. Blend equal parts of fresh and old plaster. 2. Use proper aggregate at proper proportions.

Painting Plaster

Various job conditions such as suction differences, wet or only partially dry walls, and reactions between paint and lime may cause unsatisfactory paint finishes, particularly on new construction.

Alkali-resistant primers specifically formulated for use over new plaster will permit decorating with oil or latex type paints.

Quality paint products should be used and manufacturers' recommendations followed. Finished plaster should be painted or covered to conceal possible discoloration. The paint system should be suitable for use over plaster surfaces that contain lime.

It is essential that plaster be sound and completely dry before painting. Conventional plaster may require 30 to 60 days to fully dry.



Description

Veneer Plaster Systems consist of a 4' wide gypsum plastering base with a special, highly absorptive paper surface that is covered with thinly troweled, special purpose plasters. Two basic types of veneer plaster are available: Uni-Kal and X-KALibur, which are one-coat plaster system products; and Kal-Kote, a two-coat plaster system. The gypsum plaster base, Kal-Kore, is erected in the same manner for both systems. Both veneer plaster systems can be specified for virtually all types of partition and ceiling constructions including wood or steel framing or furring and masonry. For both residential and commercial buildings, either type of veneer plaster system produces a wall more nail-pop resistant than drywall and, when properly installed, more crack resistant than conventional lath and plaster.

Features/Benefits

The advantages of veneer plaster over other commonly used partition and ceiling systems include:

- Rapid installation which reduces overall construction time.
- Appearance and surface of conventional plaster at lower cost than regular plastering.
- High resistance to cracking, nail-popping, impact and abrasion failure.
- Mill-mixed plaster components help assure uniform installation performance and finished job quality.

One-Coat System Features/Benefits (Uni-Kal®/X-KALibur® BRAND)

- Requires only one plastering material on the job.
- Slightly lower in-place cost than two-coat system.
- Can be applied directly to concrete block.
- X-KALibur is formulated to have extended set characteristics beyond traditional Uni-Kal setting times.

Two-Coat System Features/Benefits (Kal-Kote® BRAND)

- Kal-Kote System may be used for plaster-embedded electric radiant heating cable systems.
- Same application techniques as for conventional plaster.
- Greater crack resistance than one-coat systems.
- Can be applied directly to concrete block.

Limitations

- Not recommended for exterior use or where subject to weathering, direct water contact or temperature exceeding 125°F (52°C) for extended periods of time.
- Framing spacing is limited and partition heights are reduced in comparison with some standard constructions.
- Provides less rigidity than similar standard plaster systems.
- When Uni-Kal/X-KALibur will be applied, do not install Kal-Kore too far in advance of plastering since Uni-Kal/X-KALibur bond can be adversely affected if face of Kal-Kore has become faded from light. If Kal-Kore has been faded, apply Kal-Kote Base Plaster or a plaster bonding agent to obtain good bond.

- All are designed for trowel application. Veneer Plasters are not suitable for conveyance or application by conventional plastering machines.
- Compared to conventional plasters, Veneer Plaster Systems are more subject to beading (ridging) and cracking at the joints under rapid drying conditions such as those caused by low humidity, high temperature and/or high draft exposure.
- All provide a base over which paints or other finishes should be applied.
- Do not use a polyethylene vapor retarder unless structure is ventilated adequately during application of veneer plasters.
- A bonding agent must be applied to monolithic concrete prior to application of either system.
- Do not sand finished plaster.

PRODUCT SHELF LIFE

Product	Storage/ Shelf Life
X-KALibur	12 months
Kal-Kore Basecoat	12 months
Uni-Kal	12 months
Kal-Kote Smooth	12 months
Kal-Kote Texture	12 months

Veneer Plaster System Components



Kal-Kore® BRAND

Kal-Kore is a tapered edge gypsum wallboard plastering base having a blue absorptive face paper surface designed to permit rapid trowel application and strong bond of Kal-Kote, Uni-Kal and X-KALibur plasters. Also available foil backed or Fire-Shield (Type X). Kal-Kore is manufactured to conform to ASTM Specification C 588/C 1396 and CSA A82.27.

Gold Bond® BRAND Hi-Abuse® XP® Kal-Kore Plaster Base

Hi-Abuse BRAND Kal-Kore Fire-Shield Type X Plaster Base panels consist of a fire resistive type X gypsum core encased in a heavy, blue absorptive face paper designed to permit rapid trowel application and strong bond of Uni-Kal Veneer Plaster and strong liner paper on the back side. Hi-Abuse XP Kal-Kore Fire-Shield Type X Plaster Base features a specially formulated core to provide fire resistance ratings

when used in tested systems as well as greater resistance to surface indentation. Long edges of the panels are tapered to allow joints to be reinforced and concealed with Kal-Mesh Tape and Uni-Kal Plaster.

Gold Bond® BRAND Hi-Impact® XP® 5/8" Kal-Kore Fire-Shield Type X

Hi-Impact BRAND Kal-Kore Fire-Shield Type X plaster base is a tapered edge panel consisting of a fire resistive Type X gypsum core encased in a blue absorptive face paper designed to permit rapid trowel application and strong bond of Kal-Kote, Uni-Kal and X-KALibur plasters and strong liner paper on the back side. Lexan film is bonded to the back side of the panel to provide additional impact/ penetration resistance. Kal-Kore Fire-Shield Type X Hi-Impact XP is manufactured to conform to ASTM specification C 588/C 1396 and Federal Specification SS-L-30D Type VI Grade X (Fire-Shield).

SPECIFICATIONS

Size	Thickness	Edge	Pcs./Bdl.
4'x8' (1219 mm x 2438 mm)	3/8" (9.5 mm)	Tapered	2
4'x8', 12' (1219 mm x 2438 mm, 3657 mm)	1/2" (12.7 mm) 1/2" (12.7 mm) FSK-G	Tapered	2
4'x8', 12' (1219 mm x 2438 mm, 3657 mm)	5/8" (15.9 mm) FSK	Tapered	2
4'x8', 12' (1219 mm x 2438 mm, 3657 mm)	5/8" (15.9 mm) FSK Hi-Abuse	Tapered	2
4'x8', 12' (1219 mm x 2438 mm, 3657 mm)	5/8" (15.9 mm) FSK Hi-Impact	Tapered	2

FASTENERS FOR ATTACHING KAL-KORE

Framing	Kal-Kore	Fastener	Fastener Spacing
Screw Studs & Furring	1/2" (12.7 mm) 5/8" (15.9 mm)	Type S Screws 1" (25.4 mm) for single layer 1-5/8" (41.3 mm) for two-ply	12" o.c. Max. (305 mm)
Wood Framing	3/8" (9.5 mm) 1/2" (12.7 mm) 5/8" (15.9 mm)	1-1/4" (31.8 mm) annular or 4d box nails** 1-1/4" (31.8 mm) annular or 5d box nails** 1-3/8" (34.9 mm) annular or 6d box nails**	Ceiling 7" o.c. (178 mm) Max. Sidewall 8" o.c. (203 mm) Max.

** Alternate: On walls, 1-1/4" (31.8 mm) Type W screws are spaced 12" (305 mm) when framing is 24" o.c. (610 mm), 16" (406 mm) when framing is 16" o.c. (406 mm).

SPACING OF FRAMING OR FURRING

Type of Framing or Furring	Kal-Kore Thickness	Maximum Spacing on center
Wood	3/8" (9.5 mm)	16" (406 mm)*
	1/2" (12.7 mm)	24" (610 mm)**
	5/8" (15.9 mm)	24" (610 mm)
Metal***	3/8" (9.5 mm)	N.A.
	1/2" (12.7 mm)	16" (406 mm)
	5/8" (15.9 mm)	24" (610 mm)

N.A.—Not Approved.

* Bound edge of Kal-Kore must be at right angles to framing for ceiling or walls.

** Bound edge of Kal-Kore must be at right angles to joists. 16" (406 mm) maximum spacing for bound edge of Kal-Kore parallel to joists.

*** On ceilings, screw furring channel [7/8" (22.2 mm) depth] shall span 48" (1219 mm) maximum. Resilient furring channel [1/2" (12.7 mm) depth] shall span 24" (610 mm) maximum. For greater spans, 1-5/8" (41.3 mm) Screw Studs may be used as Ceiling Furring Channels provided they are secured with flanges up (open side up) at spans not to exceed: 6' (1829 mm) at 12" o.c. (305 mm) spacing, 5'6" (1676 mm) at 16" o.c. (406 mm) spacing and 5' (1524 mm) at 24" o.c. (610 mm) spacing.

Kal-Kote® Base Plaster

Kal-Kote Base Plaster is a specially designed high strength basecoat plaster for application 1/16" minimum thickness over Kal-Kore, masonry or monolithic concrete that has been treated with a bonding agent.

Strength of Kal-Kote Base is substantially greater than that exhibited by typical sanded basecoat plaster.

Fire Resistance

Fire ratings equivalent to those of drywall systems can be obtained by applying the corresponding Kal-Kore type and thickness over the same framing member size and spacing, with the same fasteners. The total plaster thickness should be a minimum of 1/8". The minimum 1/8" thickness is achieved by applying a finish not exceeding 1/16" over 3/32" of Kal-Kote Base Plaster.

Specification Reference

ASTM Designation C 587.

Bag Weight

80 lbs. (36.3 kg)

Coverage (est.)

1/16" on Kal-Kore Base, 425-475 sq. yds. per ton (150-170 sq. ft. per bag). One coat to level over masonry, 225-275 sq. yds. per ton (80-100 sq. ft. per bag).

Kal-Kote® Smooth Finish

Kal-Kote Smooth Finish is designed to provide a white smooth trowel finish using conventional plastering techniques. Apply not exceeding 1/16" over Kal-Kote Base.

Requires the addition of water only. It may also be used as a finish for conventional basecoat plasters. Small amounts of commercial retarder may be cautiously used to slow the setting time when used over conventional basecoat plasters.

Bag Weight

50 lbs. (22.7 kg)

Coverage (est.)*

1/16" coat troweled on Kal-Kote Base Plaster, 650-700 sq. yds. per ton (145-160 sq. ft. per bag).

Kal-Kote® Texture Finish

Kal-Kote Texture Finish is designed to provide a variety of decorative surfaces using common plastering techniques. Applied as a 1/16" finish coat over Kal-Kote Base. It requires the addition of water only.

Bag Weight

50 lbs. (22.7 kg)

Coverage (est.)*

1/16" coat troweled on Kal-Kote Base Plaster, 650-700 sq. yds. per ton (145-160 sq. ft. per bag).

Uni-Kal®/X-Kalibur®

Uni-Kal and X-KALibur are single component veneer plasters for application over Gold Bond tapered edge 1/2" Regular or 5/8" Fire-Shield Kal-Kore, 5/8" Hi-Abuse Kal-Kore, 5/8" Kal-Kore Hi-Impact or as a finish coat over Kal-Kote base. When applied in a thin coat 3/32" thick and troweled to a smooth finish, they provide a durable, abrasion-resistant surface for further decoration. X-KALibur has a longer extended working time. Uni-Kal and X-KALibur may be worked to a variety of textured finishes.

Uni-Kal and X-KALibur applied not exceeding 1/16" may be used as a finish coat over a 3/32" coat of Kal-Kote Base Plaster for a total minimum thickness of 1/8".

Strength of Uni-Kal and X-KALibur provides a surface resistant to abrasion, cracking and nail-pops.

Fire Resistance

Fire ratings equivalent to those of drywall systems can be obtained by applying the corresponding Kal-Kore type and thickness over the same framing member size and spacing with the same fasteners and 3/32" of Uni-Kal or X-KALibur.

Specification Reference

ASTM Designation C 587.

Bag Weight

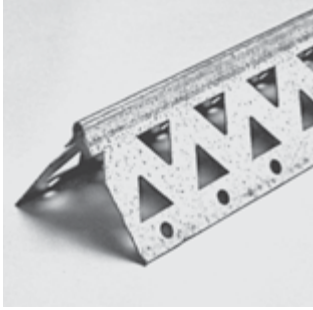
50 lbs. (22.7 kg)

Coverage (est.)*

3/32" on Kal-Kore Base, 600-665 sq. yds. per ton (135-150 sq. ft. per bag). One coat to level over masonry, 300-350 sq. yds. per ton (70-80 sq. ft. per bag).

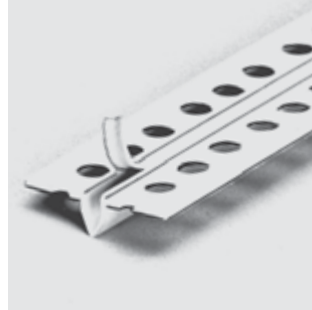
**Coverage estimates over conventional plasters are approximately the same as over Kal-Kore Base Board for conventional plasters.*

Veneer Plaster Accessories* Used in Both One-Coat and Two-Coat Systems



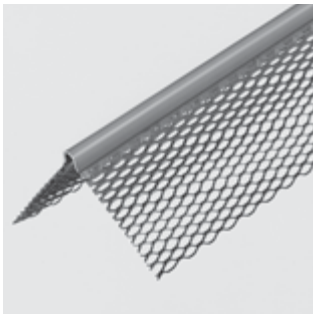
KAL-KORNER BEAD

Formed of galvanized steel to protect exterior corners with veneer plastering. Flange length 1-1/4".



E-Z STRIP® CONTROL JOINT

Designed for drywall or veneer plaster systems. A vinyl extrusion used as an expansion or control joint for ceilings or partitions.



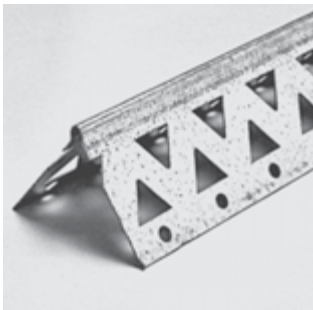
EXPANDED VENEER CORNERBEAD

Used as an alternate to the Kal-Korner Bead for exterior corners. Has 1-1/4" flanges.



KAL-MESH TAPE

A coated non-adhesive fiberglass tape which is stapled to Kal-Kore to reinforce all joints and interior angles.



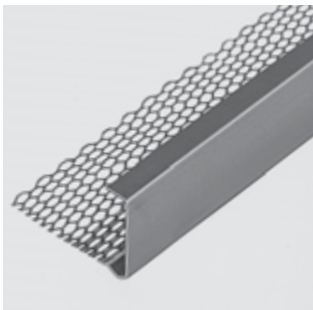
ARCH CORNERBEAD

Can be used straight for exterior corners or flanges, or may be snapped and bent to form arches.



1-1/2" DRYWALL FURRING CHANNEL CLIP

Attaches screw furring channel to 1-1/2" cold rolled steel channel.



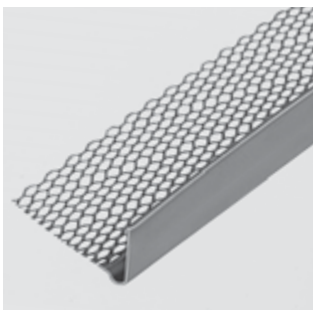
VENEER J TRIM CASING BEAD

Used as a finished edge at door and window jambs by slipping over edge of plaster base.



.093 ZINC CONTROL JOINT

Designed as an expansion or control joint for ceiling and partition areas for both drywall or veneer plaster systems.



VENEER L TRIM CASING BEAD

Used as a finished edge at door and window jambs.

* Metal products are not manufactured by National Gypsum Company.

Recommendations

Veneer Plaster for Metal and Wood Framing

1. Wood Studs or Joists. Wood members shall meet the minimum requirements of local building codes. Framing shall not exceed spacing shown on page 14. Most partition fire ratings require that Kal-Kore be applied vertically. When such ratings are not required, horizontal application may be used to minimize joints. For ceilings, application at right angles to framing is preferred.

2. Metal Studs. Align floor and ceiling tracks to assure plumb partition. Secure track with appropriate fasteners at a maximum of 24" o.c. Position studs in track on specified centers by rotating into place for a friction fit. Secure studs located adjacent to door and window frames, partition intersections and corners by self-drilling sheet metal screws through both flanges of studs and tracks or by use of screw stud clinching tool. Apply Kal-Kore vertically for most fire ratings. When ratings are not required, horizontal application may be used to minimize joints.

3. Masonry Wall Furring with Screw Furring Channel. Attach furring channel vertically spaced not to exceed spacing shown on page 14. Fasten each channel with

concrete stub nails or appropriate fasteners through channel flanges into the masonry or concrete. Fasteners shall be spaced on alternate flanges not over 24" o.c. Apply Kal-Kore vertically or horizontally in maximum lengths to minimize end joints.

4. Furred Ceilings with Bar Joists. Attach regular furring channel 16" o.c. to bar joists spaced up to 4' o.c. Resilient Furring Channel (wire-tied only) shall span a maximum of 24". Wire tie Furring Channel to joists or use 1-1/2" Drywall Furring Channel Clip for 1-1/2" carrying channel. Apply Kal-Kore with paper bound edges at right angles to the furring channel.

Kal-Kore Application

Note: Application shall conform to ASTM C 844.

1. Cut and position Kal-Kore accurately. Bring all joint edges together but do not force into place. Position all end joints over framing members. To avoid ridging, minimize gaps between adjacent panels.

2. Minimize the number of end joints by using maximum practical lengths with proper positioning.

3. Stagger joints so that they occur on different framing members and will not be directly opposite one another on partitions. Avoid joining Kal-Kore at corners of doors, window

frames, and other openings, unless control joints are created using E-Z Strip Control Joints.

4. Fasten Kal-Kore to framing members with face out, using the proper type and spacing of fasteners shown under types of fasteners.

5. Draw Kal-Kore tight to framing. Drive fasteners straight and dimple the surface without breaking the paper face.

Kal-Korner Bead Application

Install Kal-Korner Bead using appropriate fasteners spaced 12" apart.

E-Z Strip Control Joint Application

Install E-Z Strip Control Joint at 30' max. spacing on walls and 50' max. spacing in either direction on ceilings. Apply the control joint with staples spaced 6" along each side of the flanges.

Treatment of Kal-Kore Joints

Pre-treat all joints and fasteners in Kal-Kote and Uni-Kal Plaster Systems with Kal-Kote Base Plaster, Uni-Kal, X-KALibur or Sta-Smooth Joint Compound.

Low humidity, high temperatures and rapidly circulating air can cause cracking of plaster and joint beading when Kal-Kore is applied to metal framing. To minimize this during these conditions, joints may be pre-treated using paper tape.

Three acceptable methods of treating Kal-Kore joints are:

Drywall Paper Tape Treatment Method

1. Trowel Kal-Kote Base Plaster, Uni-Kal or X-KALibur over joint line filling the channel formed by the tapered edges of the Kal-Kore board in an even fashion.

2. Center drywall paper tape over the joint line and embed the tape into the soft plaster using a trowel and level the joint. Tape the full length of the joint.

3. Allow the treated joints to set prior to general plaster application.

Sta-Smooth Paper Tape Treatment Method

1. Mix Sta-Smooth Compound per instructions on package. Do not contaminate the compound with other materials, dirty water or previous mixes. Do not retemper.

2. Apply the Sta-Smooth Compound to the joint by hand or machine tool. The drywall paper tape must be centered over the joint line and embedded into the soft compound. Do not over-trowel to a slick surface. Leave the surface rough to provide mechanical keying of the plaster.

3. Allow the treated joints to set and dry prior to general plastering.



Kal-Mesh Treatment Method

Do not use self-adhering mesh.

1. Center and secure Kal-Mesh over all joints and interior angles with 1/4" or 5/16" staples.
2. Position staples a maximum of 24" apart as follows:
 - A. Joints: at alternate edges for the run from end to end and directly opposite one another at either end.
 - B. Angles: along ceiling edge only for wall-to-ceiling angles. Along one edge for wall-to-wall angles.
3. After the first staples are placed at the end of a joint or angle, pull unstapled Kal-Mesh as stapling proceeds to assure that it will lie flat against the Kal-Kore.

4. Pre-treat all joints and Kal-Beads with Kal-Kote, Uni-Kal or X-KALibur Plaster. Tightly trowel over joint line in both directions to prevent voids, feathering to a maximum width of about 6".

5. Allow the treated joints to set prior to general plaster application.

Plastering

Note: Application shall conform to ASTM C 843.

The same general job conditions used in good conventional plastering practice should be maintained. However, because Veneer Plaster coats are thin, particular action must be taken to guard against dryouts (primarily avoiding direct exposure to concentrated sources of heat and drafts.)

Special attention should also be given to temperature conditions under which the system is installed. Both "in-place" and application performance of individual Veneer System components will be greatly enhanced if all construction areas and materials are at a suitable temperature equilibrium before,



during and after installations. During cold weather, maintain a temperature 55°F (13°C) to 70°F (21°C) before, during and after installation of all system components until building is occupied.

Mixing

Equipment: Mixing should be done with a high-speed mechanical mixer. A paddle-type agitator fitted to a 500-600 RPM heavy duty, 1/2" electric drill and a clean, smooth-sided drum of convenient size are recommended for rapid, efficient mixing of all Kal-Kote Plaster types.

Water Ratios: Use only clean, fresh water suitable for human consumption. Basecoat: 10-12 qts. per 80 lb. bag. Smooth Finish: 18-20 qts. per 50 lb. bag. Texture Finish: 11-12 qts. per 50 lb. bag. Uni-Kal and X-KALibur: 13-15 qts. per 50 lb. bag.

Procedure

1. Put all but 1 to 2 qts. of the proper water volume in a suitable mixing drum.

Note: Starting with an insufficient amount of mixing water will seriously degrade mixing and application performance.

2. Add plaster and allow to soak for about 1 minute or add plaster as mixer is turning, then mix until uniformly wetted.

3. Add remaining water and mix sufficiently to obtain desired lump-free material fluidity.

Note:

A. Mixing periods greater than 5 minutes will not be required if proper equipment and procedure are used.

B. Mix no more than two bags per batch to avoid mixing too far in advance of application.

C. Caution is advised against mixing more than two successive batches without thorough equipment clean-up to avoid undue set acceleration.

D. Avoid the practice of mixing partial bags since this leads to difficulty in maintaining uniform material qualities.

Job Setting Adjustment

1. Basecoat and Finish Plasters: Small amounts of commercial retarder or commercial gypsum type accelerator may be cautiously used to adjust setting time when extreme conditions demand. When commercial retarder or accelerator is used, add to mixing water

directly, or in previously prepared water solution form to obtain the most uniform effect.

2. Never use gauging or moulding plasters in place of commercial accelerator since they can adversely affect working qualities.

Kal-Kote Application Over Kal-Kore

Basecoat Over Kal-Kore

1. Tightly scratch material into previously treated joints and corner-beads, then immediately scratch-in tightly over the wall and/or ceiling area.

2. Double back over the area just troweled with material from the same batch bringing total thickness up to 1/16" minimum.

3. When plaster has "taken up," eliminate excessive trowel marks and fill all surface voids and imperfections to obtain a reasonably uniform surface. Do not over-trowel to a slick surface. Roughen the unset basecoat plaster surface with a serrated darby or lightly wire rake to provide mechanical keying for the finish plaster when necessary.

Smooth Finish Over Basecoat

1. Apply only over properly prepared Kal-Kote basecoat plaster. Scratch-in tightly, then double back with material from the same batch immediately to create a uniform coat not exceeding 1/16" in average thickness.

2. Remove trowel marks, "cat faces," and other major surface imperfections by "drawing-up" or "laying down" the surface with light trowel pressure when plaster has stiffened.

Use water sparingly if needed, but do not over-trowel or over-water because this aggravates any normal tendency for blistering when working over low suction bases. Such blistering will be eliminated by the final water-troweling operations.

3. Water-trowel to densify and polish the surface to the desired degree when plaster has set, eliminating any blistering if present. Never use a felt "blister brush" as a substitute for water troweling!

4. Uni-Kal and X-KALibur Plaster may be substituted for Kal-Kote Smooth Finish.

Texture Finish Over Basecoat

1. Apply per (1) under Smooth Finish.

2. When plaster has stiffened, float its surface to any desired finish.

Do not float the soft surface of plaster which has already set.

Up to equal parts of clean, graded silica sand may be added to Uni-Kal and X-KALibur to aid texturing.

Uni-Kal or X-KALibur Application over Kal-Kote

1. Tightly scratch material into previously treated joints and corner-beads, then immediately scratch-in tightly over the wall and/or ceiling area.

2. Double back over the area just troweled with material from the same batch bringing total thickness up to 3/32" minimum.

3. Begin finish troweling at time of initial set, using water sparingly. Final troweling must be accomplished before complete set takes place, as evidenced by darkening of the surface.

Note: Uni-Kal or X-KALibur may be applied to produce a textured finish.

A. When Uni-Kal or X-KALibur is mixed, add up to but not exceeding 50 lbs. of silica sand, texturing grade, per 50 lb. bag of plaster.

B. The sanded Uni-Kal or X-KALibur mix should be scratched-in tightly over the plastering base. Immediately double back over the area just troweled with material from the same batch.

C. When plaster is well taken up, float to the desired texture finish.

Painting Plaster

Various job conditions such as suction differences, wet or only partially dry walls, and reactions between paint and lime may cause unsatisfactory paint finishes particularly on new construction.

Alkali-resistant primers specifically formulated for use over new plaster will permit decorating with oil or latex type paints. Quality paint products should be used and manufacturers' recommendations followed. Finished plaster should be painted or covered to conceal possible discoloration. The paint system should be suitable for use over plaster surfaces that contain lime.

It is essential that plaster be sound and completely dry before painting. Under good drying conditions, veneer plaster may be painted 48 hours after application.

Veneer Plasters Direct to Bond-Coated Monolithic Concrete

Description

The Kal-Kote System, consisting of a basecoat plaster and a finish coat plaster, Uni-Kal or X-KALibur may be applied directly to monolithic concrete treated with a bonding agent.

Limitations

1. Surface to be plastered shall be treated with a bonding agent applied according to manufacturer's directions. The performance of this system is the sole responsibility of the bonding agent manufacturer.

2. Concrete should be aged at least one month prior to plastering.

3. Kal-Kote Smooth or Texture Finishes are not designed for direct application to concrete, but must first have Kal-Kote Base Plaster applied to fill and level surface.

4. Do not apply system to the interior side of exterior walls below grade. To use above grade these walls shall be kept dry and shall have been properly waterproofed on the exterior side to prevent water penetration.

Application Procedures

Note: Application shall conform to ASTM C 843.

Kal-Kote Base Application Over Bonding Agent

1. First straighten any major surface irregularities, such as holes, ridges, wavy sections, etc. Scratch plaster in tightly by trowel and fill out to any adjacent level area.

2. After the straightening material has set, trowel in a tight scratch coat over the entire area to be plastered; then immediately double back with material from the same batch to minimum thickness of 1/16" or as required to achieve a level surface. Use a rod or feather edge if needed.

3. When plaster has "taken up", eliminate excessive trowel marks and fill all surface voids and imperfections to obtain a reasonably uniform surface. Do not trowel to a slick surface. Roughen the unset basecoat plaster surface with a serrated darby or lightly wire rake to provide mechanical keying for the finish plaster when necessary.

Smooth or Textured Finishes

Apply finishes to the Kal-Kote Plaster as outlined under the regular Kal-Kote System as described on page 18.

Uni-Kal or X-KALibur Application over Bonding Agent

1. First straighten any major surface irregularities such as holes, ridges, wavy sections, etc. Scratch plaster in tightly by trowel and fill out to any adjacent level area.

2. Allow the straightening material to set.

3. Tightly scratch material in over the wall and/or ceiling area. This application should be about 1/16" thick. Double back over the area just troweled with material from the same batch bringing total thickness up to 3/32" minimum.

4. Begin finish troweling at time of initial set, using water sparingly. Final troweling must be accomplished before complete set takes place, as evidenced by darkening of the surface.

Veneer Plasters Direct to Unit Masonry

Description

The Kal-Kote System, consisting of a basecoat plaster and a finish coat plaster, Uni-Kal or X-KALibur, and the one-coat system, may be applied direct to masonry surfaces providing the following recommendations are followed.

Recommendations

1. Surface must be free from dirt, grease, oil, mold, parting agents, or any material which will prevent plaster adhesion.

2. When erecting masonry, strike joints flush. If masonry has recessed joints, fill joints flush to masonry surface with basecoat plaster, Uni-Kal or X-KALibur and allow to set.

Exterior Corners

Install cornerbead with adhesive at least 4 and preferably 16 hours before plastering. Apply a continuous bead of adhesive approximately 1/4" x 1/4" along the inside of both cornerbead flanges. Press the bead firmly over the corner so that adhesive is in continuous contact with masonry surface. Align bead and allow to stand undisturbed at least 4 hours.

Kal-Kote Application

Note: Application shall conform to ASTM C 843.

Proceed with the full field of the wall by scratching-in tightly, then double back immediately with material from the same batch to a minimum thickness of 1/16" over the block surface, or as required to level.

Kal-Kote Finishes should be kept as thin as possible and applied as described on pages 18 and 19.

Uni-Kal or X-KALibur Application

Caution: Since Uni-Kal or X-KALibur is a one-coat material system, exercise care in leveling the wall to compensate for the uneven suction.

Proceed with full field of the wall by scratching-in tightly, then double back immediately with same batch of material to a minimum thickness of 3/32" over the block surface.

Veneer Systems Applied to Masonry with Z Furring Channel System

Description

This system consists of a Z Furring Channel, rigid insulation and the components of the Kal-Kote and Uni-Kal or X-KALibur Veneer Plaster Systems. The Z Furring Channel is manufactured from galvanized steel (.0179" min. base steel) and is produced with web depths of 1", 1-1/2" and 2". The furring channel which is applied to a masonry wall holds the insulation in place and the wide flange serves as framing for the application of the Kal-Kore plastering base.

Limitations

1. Since the interior wall surface will take the general configuration of the masonry wall, it may be necessary when applying the system to unit masonry to use portland cement plaster to bring the wall to a plane surface.

2. This system is mainly for new masonry construction. On well-cured concrete or masonry, it may be difficult to properly drive fasteners.

3. Power-driven fasteners shall be used only for attachment to monolithic concrete surfaces.

4. Kal-Kore should be applied within 24 hours of foam application.

Application Procedures

1. Begin application of Z Furring members by positioning first channel vertically at a corner, locating it on the wall adjacent to the wall being insulated first.

The insulation thickness determines the distance of Z Furring web from wall being insulated. At the appropriate distance, with wide flange pointing toward applicator, secure Z Channel with appropriate fasteners, spaced 24" o.c. driven through short flange. (Note: Power-driven fasteners are not recommended for use with masonry block.)

Install 24" wide floor-to-ceiling insulation panel, pressed snugly against web of first Z. Install next Z with the wide flange overlapping the edge of the first insulation panel. Fasten Z to wall through narrow flange. Continue in this manner with Z Furring member 24" o.c. to end of wall. Locate last Z so that web is located a distance equal to insulation thickness from adjoining wall. Cut last insulation panel to fit remaining space.

At exterior corner, attach the Z through its wide flange with narrow flange extending beyond the corner. Begin with a narrow strip of floor-to-ceiling insulation, wider than insulation thickness, but not exceeding 3". Continue application of furring and insulation progressively as described above.

At windows, doors and trim areas, use wood nailers, nominal 2" wide x insulation thickness plus 1/32". Use the nailers also at wall-floor angles to support trim and provide backing for base.

2. Apply Kal-Kore to the flanges of Z Channel with 1" Type S screws spaced 12" o.c. Normally, vertical application of Kal-Kore is recommended; however, for installations 8' or less in height, horizontal application may be preferred since the number of joints would be reduced.

3. Apply Kal-Mesh and Kal-Korner Bead according to procedures described on pages 16 and 17.

4. Mix and trowel on Kal-Kote Base and Finish Plaster or Uni-Kal Plaster as described on pages 18 and 19.

Veneer Plaster Problems and Solutions

Conditions/Causes/Prevention/Correction

Veneer plaster problems are generally related to job conditions or abuses and marginal or improper plastering techniques or practices and infrequently to a product quality deficiency.

The prime job conditions initiating problems are:

- Improper material storage and handling.
- Poor or improper plastering practices and techniques.
- Adverse or extreme environmental conditions.

- Improper or deficient substrate for accepting plasters.

Some of the problems associated with veneer plaster construction have the same cause - prevention - correction characteristics as drywall. These main common conditions are:

- Gypsum base application deficiencies.

- Structural and framing irregularities and deficiencies.
- Fastening deficiencies.
- Structural movement.

Attention to good plastering practices and procedures will minimize or eliminate job site problems and call-backs.

Condition

Probable Cause

Preventive Action

Corrective Action

IN-PLACE CONDITIONS			
Joint Cracking	<ol style="list-style-type: none"> 1. Wrong type of reinforcing mesh or tape was used. 2. No reinforcing mesh was used, or improperly positioned over joint. 3. Joint not pretreated prior to general plastering. 4. Rapid drying conditions. 5. Expansion/contraction. 6. Thermal shock. 7. Structural movement. 	<ol style="list-style-type: none"> 1-3. Use proper type of mesh and recommended joint installation procedures. – DO NOT USE SELF-STICK (PRESSURE SENSITIVE) MESH. 4. Avoid hot, low humidity air, high draft exposure. 5. Install control joints as required. 6. Avoid extreme and rapid temperature differentials (thermal shock). 7. Avoid jointing plaster base at corners of openings, stagger joints on opposite side of partition. 	<p>Large Cracks: Scrape crack and apply drywall tape and setting type joint compound.</p> <p>Small Cracks: Fill and feather out area with ready mixed joint compound.</p>
Random Or Map Cracking	Concentrated stresses caused by differential shrinkage or expansion between plaster and substrate or between individual plaster coats – thermal shock.	Maintain minimum 55°F (18°C) conditions prior to, during and after plastering.	Fill and feather area with ready mixed joint compound.
Mud Cracking (Craze, Shrinkage, Alligator)	Rapid drying or too thin plaster application.	Avoid rapid drying conditions, apply plaster at recommended thickness.	Apply ready mixed joint compound.
Dryout	<ol style="list-style-type: none"> 1. Rapid drying conditions. 2. Thin plaster application. 3. Excessive job addition or retarder. 	<ol style="list-style-type: none"> 1. Avoid rapid drying conditions. 2. Apply plaster at recommended thickness. 3. Avoid job additions of retarder. 	<p>General or large area "dry-outs" – remove plaster; vacuum or wipe down surface, apply bonding agent and replaster.</p> <p>Small areas – spray surface with water or alum solution to set plaster. Repair area with ready mixed joint compound for an acceptable surface.</p>
Nail Pops	<ol style="list-style-type: none"> 1. Nail or screw heads puncturing face paper. 2. Nails or screws not securely driven, loose or improper type. 3. Framing members out of alignment or lumber shrinkage. 4. Plaster base not applied tight against framing members. 	Follow recommended veneer plaster base application procedures.	Remove plaster around fastener and seat it properly and drive an additional fastener about 1-1/2" away from the popped fastener. Patch with plaster or ready mixed joint compound.

Condition	Probable Cause	Preventive Action	Corrective Action
IN-PLACE CONDITIONS (cont.)			
Joint Ridging Or Beading Most commonly occurring when steel studs (24" on center) are used and rapid drying conditions exist	<ol style="list-style-type: none"> 1. Large gaps between adjacent plaster base boards. 2. Improper/insufficient number/location of fasteners. 3. Gypsum base board edges damaged. 4. Wrong type or no reinforcing mesh used. 5. Joints not pre-treated prior to general plastering. 6. Rapid drying conditions. 	<ol style="list-style-type: none"> 1–3. Apply undamaged plaster base board according to recommended procedures using proper fastening. 4/5. Use recommended reinforcing mesh or paper tape and pretreat joints prior to general plastering. 6. Avoid rapid drying conditions. 	Sand the ridge or bead and apply ready mixed compound and feather out areas.
Rusting/Staining Of Finish	Use of improper fasteners or metal trim.	Use only recommended fasteners and trim.	Prime affected area with a primer/sealer and redecorate.
Photographing Or Ghosting Of Joint Line	<ol style="list-style-type: none"> 1. Differential in base plaster suction between joint and field. 2. Too thin a coat of base plaster overall, resulting in a very thin covering over mesh. 3. Partially dry base plaster, moisture content differential greater between joint and field. 	Apply basecoat plaster to full thickness, following recommended procedures.	Prime affected area with a primer/sealer and redecorate.
Joint Shadowing Caused By Depression Or Ridging	Gypsum veneer base gapped causing a depression or ridge at the joint line.	Follow recommended veneer base and plaster application procedures.	Fill depression with joint compound or sand ridges flush with field, skim coat with joint compound and redecorate.
Bond Failure Cause(s) of bond failure is perhaps the most difficult condition to diagnose because of the great number of factors which can influence plaster bonding	Product Related Causes: <ol style="list-style-type: none"> 1. Use of pressure sensitive mesh – reduces plaster substrate contact. 2. "Setting" or "drying" type joint compounds used to treat joints. Job Condition Causes: <ol style="list-style-type: none"> 1. "Dry-out" or "partial dry-out" – plaster loses water prior to complete setting or hydration. 2. Using plaster which has been exposed to the atmosphere, open bags or improper storage. 3. Freezing of plaster before setting has occurred. 4. Application of plaster over frost on substrate. 5. Excessively rapid thermal changes. 6. Excessive thermal differences between the face and back of the plaster base. Application Practice Causes: <ol style="list-style-type: none"> 1. Application of lime containing plaster over light faded veneer base. 2. Use of retempered plaster, remixing with additional water plaster which has "bucked-up" (stiffened) or started to set to render it workable again. 3. Excessive delay in applying plaster after mixing – application near or into the initial setting action. 	The best advice for preventing veneer plaster problems is to strictly follow the manufacturer's recommendations and adhere to proper plastering practices.	Remove all loose or marginally bonded plaster, brush the surface thoroughly to remove dust (vacuuming is recommended), apply a quality bonding agent per manufacturer's recommendations and replaster.

Condition	Probable Cause	Preventive Action	Corrective Action
IN-PLACE CONDITIONS (cont.)			
Bond Failure (cont.)	<ol style="list-style-type: none"> 4. Excessive use of retarder to slow setting, so partial dry-out occurs. 5. Adulteration of the plaster on the job site by addition of substances other than clean graded silica sand or excessive use of sand. 6. Application of plaster over improper substrate. 7. Application of plaster over contaminated substrate, dust, dirt, oil, soot, etc. 8. Application of plaster over substrate with excessively high suction – too high absorptivity. 9. Application of plaster over substrate with inadequate absorptivity – too low suction. 10. “Laying-on” or “buttering-on” plaster without adequate trowel pressure to provide mechanical keying to the substrate. 11. Inadequate or insufficient finish troweling. 12. Basecoat plaster troweled too smooth – reduces mechanical keying of finish to the base plaster. 13. Finish plaster applied over basecoat plaster too thick, and not tightly troweled into the base plaster. 14. One coat finish applied too thin. 	The best advice for preventing veneer plaster problems is to strictly follow the manufacturer’s recommendations and adhere to proper plastering practices.	Remove all loose or marginally bonded plaster, brush the surface thoroughly to remove dust (vacuuming is recommended), apply a quality bonding agent per manufacturer’s recommendations and replaster.
PLASTER APPLICATION CONDITIONS			
Hard (Set) Lumps In Package	Plaster bags became wet during transit or storage.	Protect plaster from water during transit and storage.	<ol style="list-style-type: none"> 1. Screen out hard lumps before mixing. 2. Discard the plaster.
Set Time Variable Within The Same Job Mixed Batch	<ol style="list-style-type: none"> 1. Improper mixing equipment. 2. Insufficient water used at the start of mixing. 3. Insufficient mixing time. 	<ol style="list-style-type: none"> 1. Use recommended mixing equipment. 2. Add all but about 1 quart of the recommended amount of water to the mixer at start. 3. Mix to a uniform fluidity; mixing time should not exceed 5 minutes. 	See Prevention.
Set Time Variable From Batch To Batch	<ol style="list-style-type: none"> 1. Dirty equipment 2. No or improper equipment clean-out procedures. 3. Partial bag mixed. 	<ol style="list-style-type: none"> 1. Use only clean equipment. 2. Follow recommended equipment clean-out procedures. 3. Use only full bags. 	See Prevention.
Slow Set Plaster	<ol style="list-style-type: none"> 1. Temperature below 40°F (4°C) or in excess of 100°F (38°C). 2. Job addition of retarder. 3. Use of old, improperly stored plaster or plaster from open bags which have been exposed to air. 4. Partial bag mixed. 	<ol style="list-style-type: none"> 1. Avoid extremes of air, plaster and mix water temperature. 2. Avoid job addition of retarder. 3. Use only properly stored plaster from unopened bags, less than a year old. 4. Use only full bags. 	<ol style="list-style-type: none"> 1/2. During cold weather maintain temperature between 55° and 70°F before, during and after plastering. Avoid job additions of retarder. Cautiously use accelerator to speed up setting action. 3. Replace material. 4. Use only full bags.

Condition	Probable Cause	Preventive Action	Corrective Action
PLASTER APPLICATION CONDITIONS (cont.)			
Quick Set	<ol style="list-style-type: none"> 1. Dirty equipment. 2. Excessive mixing. 3. Contaminated mixing water. 4. Plaster has become wet or contaminated prior to mixing. 5. Excessive use of accelerator. 6. Excessively low air/plaster mix, water temperatures below 40°F (4°C). 7. Partial bag mixed. 	<ol style="list-style-type: none"> 1. Follow recommended clean-out procedures. 2. Do not exceed 5 minutes mixing time. 3. Use only potable water. 4. Use only properly stored, uncontaminated plaster. 5. Maintain construction areas and materials above 55°F prior to, during and after plastering. 6. Avoid job additions of accelerator. 7. Use only full bag. 	<ol style="list-style-type: none"> 1–5. Follow good recommended plastering practices. 6. Cautiously use retarder to slow set time. 7. Use only full bag.
Spreading Qualities Vary Within Batch	<ol style="list-style-type: none"> 1. Improper mixing equipment/mixing action. 2. Insufficient water used at start of mixing. 3. Insufficient mixing time. 4. Aggregate separation. 	Use recommended mixing equipment, water ratio and procedure.	See Prevention.
Spreading Qualities Vary From Batch To Batch	<ol style="list-style-type: none"> 1. Inconsistent mixing. 2. Using part or open bags exposed to air. 3. Old or improperly stored plaster. 4. Variable aggregate. 	<ol style="list-style-type: none"> 1. Follow recommended mixing procedures. 2/3. Use only full, unopened bags, which have been properly stored. 4. Replace aggregate and/or plaster. 	See Prevention.
Smooth Or Texture Finish Desired, Not Obtained	<ol style="list-style-type: none"> 1. Surface of unset plaster being worked at wrong time, too stiff or too soft. 2. Suction of substrate too high or too low. 3. Surface of plaster being worked after plaster has set. 4. Intermixing material from different manufacturers. 	<ol style="list-style-type: none"> 1. Adjust finishing sequence to meet plaster condition. 2. Gypsum Base: Adjust plaster working time sequence to compensate for high or low suction. Basecoat Plaster: Apply finish over "green" moderately dry basecoat or dampen dry basecoat. 3. Follow recommended smooth or texturing procedures. 4. Use only materials from single producer to ensure compatibility. 	See Prevention.
Blistering Of Smooth Finish A common condition, especially over "green" basecoat plaster, less over gypsum veneer base	<ol style="list-style-type: none"> 1. Application of water onto the plaster surface with troweling before sufficient stiffening ("take-up") has occurred. 2. Aggravated by cold plastering surfaces. 	<ol style="list-style-type: none"> 1. Reduce trowel pressure during "double-back" and "draw-up" operation. Use water sparingly and only after adequate plaster "take-up" has developed or initial setting action has occurred. 2. Maintain recommended working area temperature. 	Eliminate blisters with strong trowel pressure during final water troweling operation, when plaster is firm and/or setting action in progress.
Fuzzing Or Ragging Of Smooth Finish Surface	<ol style="list-style-type: none"> 1. Finish plaster surface lacks sufficient water for adequate trowel lubrication or slip during "draw-up" operation. 2. Job-gauged finish components not uniformly blended, causing localized dry spots due to uneven water retention. 3. Excessive trowel pressure, trowel at wrong angle to the surface or timing wrong for troweling. 	<ol style="list-style-type: none"> 1. Wet trowel or sparingly apply water on plaster surface during "draw-up". Avoid starting "draw-up" too long after "take-up". 2. Be sure job-gauged finish components are uniformly and thoroughly blended. 3. Decrease trowel angle to surface, ease up on trowel pressure or start troweling sequence sooner. 	See Prevention.

Condition	Probable Cause	Preventive Action	Corrective Action
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PLASTER APPLICATION CONDITIONS (cont.)

Peeling And Tearing Of Smooth Finish During Application	<ol style="list-style-type: none"> 1. "Double-back" coat of finish troweled over "scratch" coat which has stiffened excessively or set. 2. Trowel pressure during "draw-up" too strong for stiffness and thickness of finish. 	<ol style="list-style-type: none"> 1. "Scratch" and "double-back" with finish from the same batch, minimizing time between coats. 2. Use only light, even trowel pressure when "drawing-up". 	See Prevention.
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DECORATING PROBLEMS

Paint Peeling/Blisters Use only quality paints specifically recommended by the paint manufacturer for application over lime (alkaline) containing plasters	<ol style="list-style-type: none"> 1. Plaster not completely dry. 2. Wrong type of paint used. 3. Plaster surface chalky. 4. Plaster surface contaminated, grease, soot. 5. Plaster became wet after decoration was completed. 	<ol style="list-style-type: none"> 1. Allow sufficient drying time before painting; consideration to environmental conditions is imperative. 2. Use only paint specifically recommended by the paint manufacturer for use over new or freshly plastered surfaces. 3. Finish plaster per recommended practices, leave plaster surface under trowel, do not brush finish. 4. Examine plaster surface for signs of contamination prior to painting. 5. Make sure areas are weather tight before plastering and printing. 	<ol style="list-style-type: none"> 1/2. Remove all peeling/blistering paint, allow sufficient drying time. Prime and redecorate. 3. Remove all peeling paint, and brush surface to remove chalkiness. Apply primer recommended by paint manufacturer for chalky plaster surfaces.
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Joint Shadowing	Depression or ridge at the joint line.	See "Joint Shadowing Caused By Depression Or Ridging."	See "Joint Shadowing Caused By Depression Or Ridging."
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Paint "Stringing" or "Roping" During Roll Application	<ol style="list-style-type: none"> 1. Wrong type of paint. 2. Solids content of paint too high. 3. Fast drying conditions. 4. Plaster surface dusty. 	<ol style="list-style-type: none"> 1. Use proper type of paint for plaster surfaces. 2. Dilute paint per manufacturer's recommendations. 3. Reduce drying conditions. 4. Make sure plaster is dust free. 	<ol style="list-style-type: none"> 1. Stop painting. 2. Check preventative measures and make necessary corrections. 3. Allow painted area to dry and repair by either sanding the affected area or skimming with joint compound to a smooth surface and repaint. 4. Brush the surface thoroughly to remove dust (vacuuming is recommended).
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Painting Plaster

Various job conditions such as suction differences, wet or only partially dry walls, and reactions between paint and lime may cause unsatisfactory paint finishes particularly on new construction.

Alkali-resistant primers specifically formulated for use over new plaster will permit decorating with oil or latex type paints. Quality paint products should be used and manufacturers' recommendations followed. Finished plaster should be painted or covered to conceal possible discoloration. The paint system should be suitable for use over plaster surfaces that contain lime.

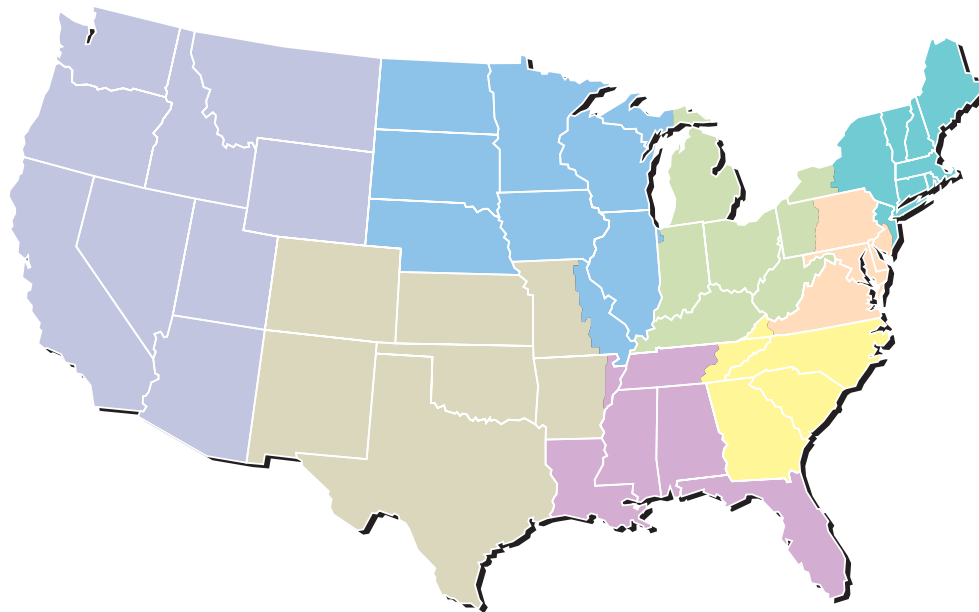
It is essential that plaster be sound and completely dry before painting. Under good drying conditions, veneer plaster may be painted 48 hours after application.

Glossary of Terms

Accelerator	.A substance used to shorten or speed up the setting action (time) of the plaster.
Admixture	.A substance other than water, or aggregate added to the plaster to alter its properties.
Aggregate	.An inert material used as a filler or texturing aid.
Anhydrite	.An anhydrous form of gypsum.
Basecoat	.A plaster coat applied over a substrate prior to application of the finish coat.
Blistering	.Bulging or separation of the wet finish plaster coat away from the base.
Bond	.Adhesion between plaster coats or between plaster and substrate produced by mechanical and chemical properties of the plaster, or intermediate bonding agents applied prior to plastering.
Bonding Agent	.An adhesive substance applied to a substrate to provide a medium for plaster bond.
Brown Out	.A darkening of the exposed plaster surface indicating setting action is complete.
Buck-Up	.A premature stiffening of plaster mortar shortly after mixing. Usually indicates a plaster deficiency or an adverse reaction to a job addition of aggregate.
Calcine	.To drive off water of crystallization by heating.
Calcined Gypsum	.Gypsum with 1-1/2 molecules of combined water removed – also called plaster, stucco, hemihydrate, semihydrate.
Cat Face	.A blemish or rough depression in the finish coat plaster.
Chemical Bond	.Bond produced by the formation and subsequent interlocking of gypsum crystals during the setting process.
Coat	.A thickness, covering, or layer of plaster applied in a single operation.
Consistency	.An amount of water required to bring a unit weight of dry plaster to a workable fluidity.
Craze Cracks	.Fine random fissures or cracks in the plaster surface caused by plaster shrinkage due to loss of water before setting.
Cure	.The state of or conditions conducive to complete hydration of the plaster.
Dolomite	.A type of lime or limestone containing calcium with up to 50% magnesium as the hydroxide or carbonate.
Double-Up	.Plaster placement characterized by application of material from the same mixed batch in successive operations without setting or drying allowed between coats – double-back, laid-off, or two-coat work.
Draw-Up	.The troweling process after the applied finish plaster has “taken up”, whereby surface irregularities are filled and leveled with or without the use of fresh plaster on the tools.
Dry-Out	.A condition where some or all of the water necessary for plaster hydration is lost by evaporation or excessive suction.
Efflorescence	.A white, fleecy surface deposit of salts.
Fat	.Soft usable plaster accumulated on trowel during finishing operation, often used to fill in small imperfections.
Finish Coat	.The last layer of plaster applied – smooth or texture.
Finishing Brushes	.Brushes used to dash water onto the surface of finish plaster during smooth troweling.
Float	.Tool or procedure used to straighten and level the finish coat surface to correct surface irregularities produced by other tools and to impart a distinctive surface texture.
Float Finish	.A finish coat texture derived primarily from aggregate particles in the plaster.
Gauging	.Gypsum plaster added to lime putty to provide and control set.
Green	.Newly applied plaster that has set but not completely dried out.
Hawk	.Tool used by plasterers to hold and carry plaster mortar, in conjunction with troweling.
Hemihydrate	.Calcined gypsum.
High Calcium Lime	.The oxide or hydroxide derived from limestone, which is principally calcium carbonate. The product contains less than 5% magnesium oxide or hydroxide.
Hydrate	.Term used to denote hydrated lime.
Hydrated Lime	.Quicklime (oxide) which has been hydrated to yield the hydroxide, a dry powder.
Joining	.The juncture of two separate plaster applications on a common surface.
Landplaster	.Ground natural gypsum.
Lay Down	.The troweling process after the applied finish plaster has “taken up”, whereby surface irregularities are filled and leveled with or without the use of fresh plaster on the tools.

Lean Mixture	High aggregate to plaster ratio; often exhibits poor working qualities.
Light Weight Aggregate	Expanded perlite or vermiculite.
Lime	Oxides or hydroxides of calcium or calcium and magnesium.
Lime Putty	A thick paste obtained by "slaking" quicklime or soaking and mixing hydrated lime with a minimum of water.
Mechanical Bond	Physical keying of plaster to substrate.
Mill Mixed	Plasters requiring only water addition on the job site.
Mortar	A material used in plastic state which can be troweled and hardens after placement.
Mud Cracks	Fine random cracks in the plaster surface caused by plaster shrinkage due to loss of water (dry-out) before setting.
Perlite	A siliceous volcanic glass – expanded by heating into a lightweight plaster aggregate.
Plaster Bond	Adhesion between plaster coats or between plaster and a plaster substrate produced by a mechanical and chemical interlocking of plaster with the substrate.
Purity	The percentage of calcium sulfate dihydrate contained in a fully hydrated gypsum plaster.
Relative Humidity	The ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature, expressed as a percentage.
Retarder	A material added to plaster which will lengthen the setting time.
Retemper	To mix additional water with plaster which has begun to stiffen or set so as to render it workable again.
Sand	A washed and size-graded, granular natural material (aggregate) added to veneer plasters to aid float texturing of the plaster.
Scratch And Double	Plaster application characterized by a tight application of plaster against the substrate and immediately followed by a second application of plaster from the same batch of mixed plaster.
Setting Time	The elapsed time after mixing with water for the plaster to harden or hydrate.
Sweeten	The troweling process after the applied finish plaster has "taken up", whereby surface irregularities are filled and leveled with or without the use of fresh plaster on the tools.
Take-Up	A normal stiffening of the applied plaster resulting from the removal of water from the plaster by absorption (suction) into the substrate.
Trowel Finish	Denotes a smooth finish surface produced by troweling.
Veneer Plaster	A specially manufactured gypsum plaster which provides strength, hardness and abrasion resistance and is capable of thin application over designated substances.
Veneer Plaster Base	A gypsum board with special paper facing designed to provide water absorption for rapid veneer plaster application and finishing.
Workability	The ease and speed with which plaster mortar can be applied and finished.

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