



Designation: C926 – 20b

Standard Specification for Application of Portland Cement-Based Plaster¹

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1. Scope*

1.1 This specification covers the minimum technical requirements for the application of full thickness portland cement-based plaster for exterior (stucco) and interior work. These requirements do not by default define a unit of work or assign responsibility for contractual purposes, which is the purview of a contract or contracts made between contracting entities.

1.2 This specification sets forth tables for proportioning of various plaster mixes and plaster thickness.

NOTE 1—General information will be found in [Annex A1](#). Design considerations will be found in [Annex A2](#).

1.3 The text of this specification references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the specification.

1.4 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

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2. Referenced Documents

2.1 *ASTM Standards*:²

- [C11 Terminology Relating to Gypsum and Related Building Materials and Systems](#)
- [C25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime](#)
- [C35 Specification for Inorganic Aggregates for Use in Gypsum Plaster](#)
- [C91/C91M Specification for Masonry Cement](#)
- [C150/C150M Specification for Portland Cement](#)
- [C206 Specification for Finishing Hydrated Lime](#)
- [C207 Specification for Hydrated Lime for Masonry Purposes](#)
- [C219 Terminology Relating to Hydraulic and Other Inorganic Cements](#)
- [C260/C260M Specification for Air-Entraining Admixtures for Concrete](#)
- [C578 Specification for Rigid, Cellular Polystyrene Thermal Insulation](#)
- [C595/C595M Specification for Blended Hydraulic Cements](#)
- [C631 Specification for Bonding Compounds for Interior Gypsum Plastering](#)
- [C897 Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters](#)
- [C932 Specification for Surface-Applied Bonding Compounds for Exterior Plastering](#)
- [C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster](#)
- [C1116/C1116M Specification for Fiber-Reinforced Concrete](#)
- [C1328 Specification for Plastic \(Stucco\) Cement](#)
- [C1787 Specification for Installation of Non Metallic Plaster Bases \(Lath\) Used with Portland Cement Based Plaster in Vertical Wall Applications](#)
- [E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements](#)

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

*A Summary of Changes section appears at the end of this standard

E119 Test Methods for Fire Tests of Building Construction and Materials

E492 Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

2.2 ANSI Standard:³

A108.1 Specification for Installation of Ceramic Tile

3. Terminology

3.1 Definitions:

3.1.1 Terms shall be defined as in Terminology C11 and Terminology C219, except as modified herein.

3.1.2 *contract documents, n*—a series of several individual items that generally include drawings and specifications. Either or both of these documents may exist for any particular project.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *accelerator, n*—an admixture that will shorten the setting time of plaster.

3.2.2 *acid etching, n*—the cleansing and controlled erosion of a solid surface, using an acid wash.

3.2.3 *admixture, n*—a material other than water, aggregate, or basic cementitious material added to the batch before or during job mixing.

3.2.4 *air entrainment, n*—the use of an air-entraining admixture or air-entraining cementitious material in a plaster mix to yield a controlled quantity of minute (typically between 10 and 1000 µm in diameter) disconnected air bubbles in the plaster (see *entrapped air*).

3.2.5 *back wrap, n*—a means of terminating a polymer-modified, fabric reinforced cementitious base coat by wrapping the reinforcing mesh, which has been affixed to the substrate onto the outboard surface of the foam plastic core to provide continuity of the reinforced base coat and protection for the foam plastic core.

3.2.6 *backplaster, n*—plaster applied to the face of metal lath opposite a previously applied plaster.

3.2.7 *barrier wall, n*—type of wall system that is intended to block or interrupt the movement of water to the interior.

3.2.8 *bond, n*—the state of adhesion between plaster coats or between plaster and plaster base.

3.2.9 *bonding compound or agent, n*—compounds surface applied or integrally mixed with plaster to improve the quality of bond between plaster and plaster base or between plaster coats.

3.2.10 *cementitious material, n*—a material that, when mixed with water and with or without aggregate, provides the plasticity and the cohesive and adhesive properties necessary for placement and the formation of a rigid mass.

3.2.11 *coat, n*—a thickness of plaster applied in a single operation.

3.2.11.1 *basecoat, n*—all plaster applied before the application of the finish coat.

3.2.11.2 *bedding coat, n*—a plaster coat that receives aggregate or other decorative material impinged into its surface before it sets.

3.2.11.3 *brown coat, n*—in three-coat work, the second coat, applied over the scratch coat. In two-coat work, brown coat refers to the double-up basecoat. In either use, the brown coat is the coat directly beneath the finish coat.

3.2.11.4 *dash-bond coat, n*—a thick wet mixture of portland cement and water, with or without aggregate, dashed onto the surface of a plaster base such as smooth monolithic concrete or concrete block surfaces to improve the mechanical key for subsequent plaster coats.

3.2.11.5 *double-up coat, n*—the brown-coat plaster applied to the scratch coat plaster before the scratch-coat plaster has set.

3.2.11.6 *finish coat, n*—the final layer of plaster applied over basecoat plaster.

3.2.11.7 *fog coat, n*—a light coat of cement and water, with or without aggregate or color pigment, applied by machine spray to improve color consistency.

3.2.11.8 *scratch coat, n*—the first coat of plaster applied to a plaster base.

3.2.11.9 *skim coat, n*—a thin finish coat applied to an existing plaster surface or other substrate to improve appearance.

3.2.11.10 *three-coat work, n*—application of plaster in three successive coats with time between coats for setting or drying, or both.

3.2.12 *cold joint (“joining” or “jointing”), n*—the juncture of fresh plaster application adjacent to set plaster, in the same plane.

3.2.13 *curing, v*—the act or processes of producing a moisture environment favorable to cement hydration, resulting in the setting or hardening of the plaster.

3.2.14 *drainage wall, n*—a wall system in which the cladding provides a substantial barrier to water intrusion, and which also incorporates a concealed water-resistive barrier over which drainage will occur.

3.2.15 *entrapped air, n*—unintentional air voids in the plaster generally larger than 1 mm.

3.2.16 *factory prepared (“mill-mixed” or “ready mixed”), adj*—pertaining to material combinations that have been formulated and dry-blended by the manufacturer, requiring only the addition of and mixing with water to produce plaster.

3.2.17 *fiber, natural or synthetic, n*—an elongated fiber or strand admixture added to plaster mix to improve cohesiveness or pumpability, or both.

3.2.18 *floating, v*—act of compacting and leveling brown-coat plaster to a reasonably true surface plane using a float tool or the act of bringing the aggregate to the surface of finish-coat plaster.

3.2.19 *key (also mechanical key), n*—plaster that physically surrounds, penetrates, or deforms to lock onto the perforations or irregularities of the plaster base or previous coat of plaster.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

3.2.20 *lath, n*—a mechanically attached base material used to support plaster installation including metal plaster bases (expanded metal lath, woven wire plaster base, and welded wire lath) and non-metallic plaster bases.

3.2.21 *metal plaster base, n*—expanded metal lath, or welded or woven wire lath.

3.2.22 *plaster, n*—portland cement-based cementitious mixture (see *stucco*).

3.2.23 *polymer modified cementitious base coat, n*—A base coat containing portland cement modified with chemical admixtures (typically polymer latexes) to improve characteristics of the finished product, such as workability, plasticity, water resistance, and adhesion.

3.2.24 *required, adj*—pertaining to a mandatory obligation imposed by a force outside of this specification, such as a building code, project specification, contract, or purchase order.

3.2.25 *rustication (also “break”), n*—an interruption or change in plane of a plastered surface.

3.2.26 *scoring (also known as “scratching”), n*—the grooving of the surface of an unset plaster coat to provide a key for a subsequent coat.

3.2.27 *set, n*—the chemical and physical change in plaster as it goes from a plastic, workable state to a rigid state.

3.2.28 *solid plaster bases, n*—substrates that do not require lath, including cast in place and precast concrete, concrete and stone masonry, clay brick, and tile.

3.2.29 *stucco, n*—portland cement-based plaster used on exterior locations.

3.2.30 *stucco finish, n*—a factory-prepared, dry blend of materials for finish coat applications.

3.2.31 *temper, v*—to mix or restore unset plaster with water to a workable consistency.

3.2.32 *texture, n*—any surface appearance as contrasted to a smooth surface.

4. Delivery and Storage of Materials

4.1 Delivery:

4.1.1 Packaged materials shall be delivered in factory-sealed, unopened, and unbroken packages, containers, or bundles.

4.1.2 Bulk materials shall be delivered in clean transport vessels, free of contaminants.

4.2 Storage:

4.2.1 Weather-sensitive materials shall be kept in a dry condition until ready for use. (See [A2.4](#).)

4.2.2 Bulk materials shall be stored to prevent subsequent contamination and segregation.

5. Materials

5.1 Materials shall conform to the requirements of the referenced specifications and standards and to the requirements specified herein.

5.2 Cement:

5.2.1 *Portland Cement*—Specification [C150/C150M](#), Type I, II, and III, as specified. White where specified.

5.2.2 *Air-entraining Portland Cement*—Specification [C150/C150M](#), type as specified. White where specified.

5.2.3 *Masonry Cement*—Specification [C91/C91M](#), Types N, S, and M. White where specified.

5.2.4 *Blended Hydraulic Cement*—Specification [C595/C595M](#), Type IP, IS(<70), IL, and IT(S<70), as specified.

5.2.5 *Air-entraining Blended Hydraulic Cement*—Specification [C595/C595M](#), Type IP-(A), IS(<70)-(A), IL-(A), and IT (S<70)-(A), as specified.

5.2.6 *Plastic Cement*—Plastic Cement shall meet the requirements of Specification [C1328](#), Standard Specification for Plastic (Stucco) Cement.

NOTE 2—Plastic cements are not available nationally.

5.3 *Type “S” Hydrated Lime*—A hydrated lime that contains not more than 8 % unhydrated oxides when tested in accordance with Test Methods [C25](#). See Specifications [C206](#) and [C207](#) for a complete description of a Type “S” hydrated lime.

5.4 Aggregates:

5.4.1 *Sand for Base Coats*—Specification [C897](#). Aggregate failing to meet gradation limits in Specification [C897](#) shall be permitted to be used, provided the plaster made with this sand has an acceptable demonstrated performance record in similar construction and climate conditions.

5.4.2 *Perlite*—Specification [C35](#).

5.4.3 *Sand for Job-mixed Finish Coats*—Specification [C897](#).

5.5 *Water*—Water used in mixing, application, and finishing of plaster shall be clean, fresh, suitable for domestic water consumption, and free of such amounts of mineral or organic substances as would affect the set, the plaster, or any metal in the system.

5.6 *Admixtures*—See [3.2.3](#) and [A2.5](#).

5.7 *Fibers*—Specification [C1116/C1116M](#) on alkali-resistant fibers, glass fibers, nylon, polypropylene, or carbon fibers.

5.8 *Product Marking*—Packaged materials shall be clearly marked or labeled to indicate product, brand name, the manufacturer, and the weight of the material contained therein. Similar information shall be provided in the shipping advices accompanying the shipment of bulk materials.

6. Requirements for Bases to Receive Portland Cement-Based Plaster

6.1 Lath, lathing accessories, furring accessories and fasteners used to receive plaster shall be installed in conformance with Specification [C1063](#), except as otherwise specified. Non-metallic plaster bases used to receive plaster shall be installed in conformance with Specification [C1787](#).

NOTE 3—Plaster bases and lathing accessories shall be free of deleterious amounts of rust, oil, or other foreign matter, which could cause bond failure or unsightly discoloration.

6.2 Surfaces of solid bases to receive plaster, such as masonry, stone, cast-in-place or precast concrete shall be straight and true within ¼ in. (6 mm) in 10 ft (3 m) and shall

be free of form oil or other elements, which would interfere with bonding. Conditions where the surfaces are out of tolerance shall be corrected prior to the application of the plaster. Ferrous-containing form ties or other obstructions shall be removed or receded a minimum 1/8 in. (3 mm) below the surface of the solid base and treated with a corrosion-resistant coating. Non-ferrous protuberances shall be permitted to be trimmed back even with the surface of the solid base.

TABLE 1 Plaster Bases—Permissible Mixes

NOTE 1—See Table 2 for plaster mix symbols.

Property of Base	Mixes for Plaster Coats	
	First (Scratch)	Second (Brown)
Low absorption, such as dense, smooth clay tile, brick, or concrete	C	C, CL, M, or CM
	CM or MS	CM, MS, or M
	P	P
High Absorption, such as concrete masonry, absorptive brick, or tile	CL	CL
	M	M
	CM or MS	CM, MS, or M
	P	P
Lath	C	C, CL, M, CM, or MS
	CL	CL
	CM or MS	CM, MS, or M
	M	M
	CP or P	CP or P

6.2.1 Solid surfaces shall have the suction (ability to absorb water) or surface roughness, or both, to provide the bond required for the plaster.

6.2.2 Smooth or nonabsorbent solid surfaces, such as cast-in-place or precast concrete, shall be prepared to receive portland cement plaster by one of the following methods:

6.2.2.1 Sandblasting, wire brushing, acid etching, or chipping or a combination thereof,

6.2.2.2 Application of a dash-bond coat applied forcefully against the surface, left untroweled, undisturbed, and moist cured for at least 24 h, or

6.2.2.3 Application of a bonding compound suitable for exterior or interior exposure solid surfaces in accordance with the manufacturer’s written directions.

6.2.3 Where bond cannot be obtained by one or more of the methods in 6.2.2, a furred or self-furring plaster base shall be installed in accordance with Specification C1063 or C1787 as

appropriate. Where plaster base is used in areas where bond cannot be obtained by one or more of the methods in 6.2.2, accessories shall be installed in accordance with Specification C1063 or C1787 as appropriate.

7. Application

7.1 *Plaster Proportions:*

7.1.1 All portland cement plasters shall be mixed and proportioned in accordance with the following tables and accompanying requirements, using measuring devices of known volume with successive batches proportioned alike.

7.1.2 Plaster mix used shall be as designated and referenced to Table 1.

7.1.3 Base-coat proportions shall be as shown in Table 2 for the mix specified from Table 1.

7.1.3.1 *Measurement of Materials*—The method of measuring materials for the plaster shall be such that the specified proportions are controlled and accurately maintained. The weights per cubic foot of the materials are considered to be as follows:

Material	Weight, lb/ft ³ (kg/m ³)
Portland cement	94 (1505)
Blended cement	Weight printed on bag
Masonry or plastic cement	Weight printed on bag
Hydrated Lime	40 (640)
Lime Putty	80 (1280)
Sand, Damp and Loose (7.1.3.2)	80 (1280) of dry sand

7.1.3.2 For purposes of this specification, a weight of 80 lb (1280 kg) of oven-dried sand shall be used. This is, in most cases, equivalent to one cubic foot of loose, damp sand.

7.1.4 Finish-coat proportions for job-mixed finish coats shall be as specified in Table 3.

7.1.5 *Factory-Prepared Finish Coats*—See 3.2.16.

7.1.6 Dash-bond coat proportions shall be 1 volume part portland cement and not more than two volume parts of aggregate mixed to a consistency that will permit application as specified in 7.3.5.

7.1.7 Admixtures shall be proportioned, mixed, and applied in accordance with the printed directions of the manufacturer. (See A2.5.)

7.1.8 Where specified, natural or synthetic fibers shall be free of contaminants and used only in the base coat(s). The quantities per batch shall be in accordance with the published directions of the fiber manufacturer.

TABLE 2 Base-coat Proportions,^A Parts by Volume^B

Plaster Mix Symbols	Cementitious Materials				Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials		
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement		Lime	1st Coat	2nd ^C Coat
			N	M or S			
C	1	...	...	...	0–3/4	2 1/2 –4	3–5
CL	1	...	...	...	3/4 –1 1/2	2 1/2 –4	3–5
M	...	...	1	...	...	2 1/2 –4	3–5
CM	1	...	1	...	...	2 1/2 –4	3–5
MS	...	...	...	1	...	2 1/2 –4	3–5
P	...	1	...	...	...	2 1/2 –4	3–5
CP	1	1	...	...	...	2 1/2 –4	3–5

^A The mix proportions for plaster scratch and brown coats to receive ceramic tile shall be in accordance with the applicable requirements of ANSI A108.1 series applicable to specified method of setting time.

^B Variations in lime, sand, and perlite contents are allowed due to variation in local sands and insulation and weight requirements. A higher lime content will generally support a higher aggregate content without loss of workability. The workability of the plaster mix will govern the amounts of lime, sand, or perlite.

^C The same or greater sand proportion shall be used in the second coat than is used in the first coat.