



# Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters<sup>1</sup>

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## 1. Scope \*

1.1 This specification covers natural or manufactured aggregate for use in job-mixed base and finish-coat full thickness portland cement, portland cement-lime and modified portland cement plasters.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI (metric) values given in parentheses are approximate and are provided for information purposes only.

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.

## 2. Referenced Documents

### 2.1 ASTM Standards:

- C 11 Terminology Relating to Gypsum and Related Building Materials and Systems<sup>2</sup>
- C 40 Test Method for Organic Impurities in Fine Aggregates for Concrete<sup>3</sup>
- C 87 Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar<sup>3</sup>
- C 88 Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate<sup>3</sup>
- C 117 Test Method for Material Finer than 75-Micrometre (No. 200) Sieve in Mineral Aggregates by Washing<sup>3</sup>
- C 123 Specification for Lightweight Pieces in Aggregate<sup>3</sup>
- C 125 Terminology Relating to Concrete and Concrete Aggregates<sup>3</sup>
- C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates<sup>3</sup>
- C 142 Test Method for Clay Lumps and Friable Particles in Aggregates<sup>3</sup>
- D 75 Practice for Sampling Aggregates<sup>4</sup>

## 3. Terminology

3.1 *Definitions*—Definitions used in this standard shall be in accordance with Terminologies C 11 and C 125.

<sup>1</sup> 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 C 11.02 on Specifications and Test Methods for Accessories and Related Products.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.03.

## 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *aggregate, n*—a granular material such as natural or manufactured sand used with a cementing medium to form plaster (stucco).

3.2.2 *manufactured sand*—the fine material resulting from the crushing and classification by screening, or otherwise, of rock, gravel, or blast furnace slag.

3.2.3 *natural sand*—the fine granular material resulting from the natural disintegration of rock.

## 4. Composition

4.1 *Deleterious Substances*—The amount of deleterious substances in aggregates, each determined on independent samples complying with the grading requirements of Section 6, shall not be more than the following:

Item	Maximum Permissible Weight, %
Friable particles	1.0
Light weight particles, floating on liquid having a specific gravity of 2.0	0.5

## 4.2 Organic Impurities:

4.2.1 The aggregate shall be free of injurious amounts of organic impurities. Except as herein provided, aggregates subjected to the test for Organic Impurities, Test Method C 40, and producing a color darker than the standard shall be rejected.

4.2.2 Aggregate failing the test for organic impurities may be used provided that, when tested for the effect of organic impurities on strength in accordance with Test Method C 87, the relative strength at 7 days is not less than 95 %.

## 5. Physical Properties

### 5.1 Soundness (see 7.1.7):

5.1.1 Except as herein provided, aggregate subjected to five cycles of the soundness test shall show a loss, when weighed in accordance with the grading of a sampling complying with the limitations set forth in Section 6, not greater than 20 % when sodium sulfate is used, or 15 % when magnesium sulfate is used.

5.1.2 Aggregates failing to meet the requirements of 5.1.1 shall be accepted, provided there is evidence that plasters of comparable properties made from similar aggregates from the same source has been exposed to weathering, similar to that to be encountered, for a period of more than 5 years without appreciable disintegration.

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

## 6. Dimensions, Mass, and Permissible Variations

6.1 *Aggregate for Base Coat*—Aggregate for use in base coat portland cement-based plasters shall be graded as follows:

U.S. Standard Sieve	Percent Retained (by Weight)			
	Natural Sand		Manufactured Sand	
	max	min	max	min
No. 4 (4.75 mm)	0	0	0	0
No. 8 (2.36 mm)	10	0	10	0
No. 16 (1.18 mm)	40	10	40	10
No. 30 (600 $\mu$ m)	65	30	65	30
No. 50 (300 $\mu$ m)	90	70	80	60
No. 100 (150 $\mu$ m)	100	95	90	75
No. 200 (75 $\mu$ m)	100	97	100	90

6.1.1 Not more than 50 % shall be retained between any two consecutive sieves shown in the above table, nor more than 25 % between No. 50 (300- $\mu$ m) and No. 100 (150- $\mu$ m) sieves. The amount of material finer than a No. 200 (75- $\mu$ m) sieve shall not exceed 3 %.

6.1.2 The fineness modulus shall fall between 2.05 and 3.05. If the fineness modulus varies by more than 0.25 from the value assumed in selecting proportions for the plaster, the aggregate shall be rejected unless adjustments are made in proportions to compensate for change in grading.

NOTE 1—The gradation of aggregate used in portland cement-based plaster affects the workability, shrinkage characteristic porosity, and durability of the plaster.

6.2 *Aggregate for Finish Coat Plaster*— Aggregate for finish coat plaster shall all pass the No. 8 (2.36 mm) sieve and meet the remaining gradation requirements of 6.1, except where special texture finishes require gradation of aggregate outside of these limits.

6.2.1 When special texture finishes require gradation of the aggregate outside of the limits of 6.1, sample panels shall be required and evaluated in accordance with criteria defined in the purchase agreement.

NOTE 2—Special texture finishes may require modification of the plaster formulation and application to compensate for the effect of aggregate gradation.

## 7. Sampling and Testing

7.1 The aggregate shall be sampled and tested as specified in the following methods, except as otherwise specified in this specification:

7.1.1 *Sampling*, Practice D 75.

7.1.2 *Fineness Modulus*, Terminology C 125, is obtained by adding the total percentages shown by the sieve analysis to be retained on each of the sieves in 6.1 and dividing the sum by 100.

7.1.3 *Materials Finer than No. 200 (75- $\mu$ m) Sieve*, Test Method C 117 by washing.

7.1.4 *Friable Particles*, Test Method C 142.

7.1.5 *Light Constituents*, Test Method C 123.

7.1.6 *Organic Impurities*, Test Method C 40.

7.1.7 *Soundness*, Test Method C 88.

7.1.8 *Sieve Analysis*, Test Method C 136.

## 8. Inspection

8.1 Inspection of the material shall be agreed upon between the purchaser and supplier as part of the purchase contract.

## 9. Rejection and Rehearing

9.1 Any rejection shall be based upon the specific cause of failure to conform to the requirements of this specification, and shall be reported to the seller within ten working days from the receipt of the shipment by the purchaser.

9.2 Claims for rehearing shall be valid only if made within 20 working days from receipt of notice of specific cause for rejection.

## 10. Certification

10.1 When specified in the purchase order a producer's or supplier's certification shall be furnished to the purchaser that the material was prepared or manufactured in accordance with this specification and has been found to meet the specified requirements.

## 11. Packaging and Package Marking

11.1 Where packaged, the materials shall be packaged in substantial commercial containers of the type, size, and kind commonly used for the purpose, so constructed as to preserve the contents in good condition, and to ensure acceptance and safe delivery by common or other carriers, at the lowest rate, to the point of delivery.

11.2 The containers shall be so made that the contents can be partially removed without destroying the container's ability to serve as a receptacle for the remainder of the contents.

11.3 The containers shall be labeled to show the content, weight, and the name of the manufacturer or supplier.

11.4 Where delivered in bulk quantities, the bill of lading shall show the quantity by weight, or cubic yards, and the name of the manufacturer or supplier.

11.5 Each package or container shall be marked with the name of manufacturer, description of contents, and amount.

## 12. Keywords

12.1 aggregate; fine aggregate; gradation; natural and manufactured sand; particle shape and size; plaster stucco; soundness

**SUMMARY OF CHANGES**

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|--|---|
| (1) Revised Section 2.                                 | wrong Test Method) & 7.1.5 (Referenced a “Specification” in lieu of “Test Method”). |
| (2) Revised paragraph 4.1.                             |   |
| (3) Added paragraph 4.2-4.2.2.                         | (6) Editorially deleted paragraphs 7.1.7 & 7.1.10 — Reason:                         |
| (4) Deleted paragraph 7.1.10.                          | There is no reference to these items in the specification.                          |
| (5) Editorially corrected paragraphs 7.1.3 (Referenced |   |

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