



Designation: ~~C35 – 01 (Reapproved 2009)~~ C35 – 01 (Reapproved 2014)

Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster¹

This standard is issued under the fixed designation C35; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers perlite, vermiculite, natural and manufactured sand for use as gypsum plaster aggregates.

1.2 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.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.4 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:*²

[C11 Terminology Relating to Gypsum and Related Building Materials and Systems](#)

[C29/C29M Test Method for Bulk Density \("Unit Weight"\) and Voids in Aggregate](#)

[C40 Test Method for Organic Impurities in Fine Aggregates for Concrete](#)

[C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates](#)

[C471M Test Methods for Chemical Analysis of Gypsum and Gypsum Products \(Metric\)](#)

[D75 Practice for Sampling Aggregates](#)

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

3. Terminology

3.1 Definitions shall be in accordance with Terminology [C11](#).

3.2 *Definitions of Terms Specific to This Standard:*

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

3.2.2 *natural sand, n*—the fine granular material resulting from the natural disintegration of rock or from the crushing of friable sandstone.

3.2.3 *perlite aggregate, n*—a siliceous volcanic glass expanded by heat.

3.2.4 *vermiculite aggregate, n*—a micaceous mineral expanded by heat.

4. Chemical Composition

4.1 Water-soluble impurities in sand shall not exceed 0.15 weight % and sodium ion content shall not exceed 0.02 weight % when tested in accordance with Section 7.

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 C11.02 on Specifications and Test Methods for Accessories and Related Products.

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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**

4.2 Sand shall develop a color no darker than the standard, when subjected to the colorimetric test for organic impurities in accordance with Test Method C40, unless it is established by adequate tests that the impurities causing the color are not harmful in plaster.

5. Mechanical Requirements

5.1 *Grading*—Shall be as follows when tested in accordance with Section 7:

5.1.1 Perlite and vermiculite shall be graded within the limits specified in Table 1.

5.1.2 *Natural and Manufactured Sand*—Shall be graded with not more than 50 % retained between any two consecutive sieves shown in Table 1, nor more than 25 % between the No. 50–No. 50 (300 μm) and No. 100–No. 100 (150 μm) sieves.

5.2 *Density*:

5.2.1 Perlite shall have a density of not less than 6 nor more than 12 lb/ft³ (96 to 192 kg/m³) when tested in accordance with Test Method C29/C29M using the shoveling procedure.

5.2.2 Vermiculite shall have a density of not less than 6 nor more than 10 lb/ft³ (96 to 160 kg/m³) when tested in accordance with Test Method C29/C29M using the shoveling procedure.

6. Sampling

6.1 *Apparatus*—Suitable thief tube.

6.2 *Bulk Aggregate*—Obtain specimens of sand in accordance with Practice D75.

6.3 *Bagged Aggregate*—Obtain from 1 bag randomly selected from each 100 bags but not less than 6 bags from the shipment. For smaller shipments, not less than 6 % of the number of bags shall constitute the sample.

6.3.1 Secure specimens by inserting a suitable thief tube the full distance between diagonally opposite corners of the bag with the bag lying in a horizontal position. Combine the portions to produce a composite specimen having a volume not less than 1 ft³ (0.028 m³). Prepare and test not less than 1 composite specimen separately for each 2000 bags of aggregate.

6.4 Reduce specimens obtained in accordance with 6.2 or 6.3 by quartering or riffing to obtain specimens of proper size for individual tests.

7. Test Methods

7.1 *Apparatus*:

7.1.1 *Sieve*—Specification E11, Nos. 4, 8, 16, 30, 50, 100, 200 (4.75, 2.36, 1.18 mm, 600 μm, 300 μm, 150 μm, 15 μm).

7.1.2 *Graduated 250 mL Cylinder*.

7.1.3 *250 mL Beaker*.

7.1.4 *Tared Evaporating Dish*.

7.1.5 *Fast Paper Filter*.

7.1.6 *100 mL Volumetric Flask*.

TABLE 1 Grading Requirements

Sieve Size	Percentage Retained on Each Sieve, Cumulative					
	Perlite, by volume		Vermiculite, by volume		Sand, by weight	
	Max	Min	Max	Min	Max	Min
No. 4 (4.75-mm)	0	∞	0	∞	0	∞
No. 8 (2.36-mm)	5	0	10	0	5	0
No. 16 (1.18-mm)	60	5	75	40	30	5
No. 30 (600-μm)	95	45	95	65	65	30
No. 50 (300-μm)	98	75	98	75	95	65
No. 100 (150-μm)	100	85	100	90	100	90
No. 200 (75-μm)					100	95

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No. 50 (300-μm)	98	75	98	75	95	65
No. 100 (150-μm)	100	85	100	90	100	90
No. 200 (75-μm)					100	95