~~Designation:C35–01~~ Designation: C 35 – 01 (Reapproved 2005)

Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster[1]

This standard is issued under the fixed designation C 35; 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 Department of Defense.

1. Scope *

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

~~1.2The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.~~

1.2

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.*

~~1.4The~~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]

C 11 Terminology Relating to Gypsum and Related Building Materials and Systems

C 29/C 29M ~~Test Method for Unit Weight and Voids in Aggregate~~ Test Method for Bulk Density (Unit Weight) and Voids in Aggregate

C 40 Test Method for Organic Impurities in Fine Aggregates for Concrete

C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates

C 471M Test Methods for Chemical Analysis of Gypsum and Gypsum Products

D 75 Practice for Sampling Aggregates

E 11 Specification for Wire-Cloth and Sieves for Testing Purposes

3. Terminology

3.1 Definitions shall be in accordance with Terminology C 11.

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.

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 C 40, unless it is established by adequate tests that the impurities causing the color are not harmful in plaster.

---

[1] This specification is under the jurisdiction of ASTM Committee C11 ~~on Ceiling and Walls and is the direct responsibility of Subcommittee~~ 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.

~~Current edition approved May 10, 2001. Published June 2001. Originally published as C35-21 T. Last previous edition C35–95 (2000).~~

Current edition approved Oct. 1, 2005. Published November 2005. Originally approved in 1921. Last previous edition approved in 2001 as C 35 – 01.

[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* ~~, Vol 04.01.~~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.**

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 (300 µm) and 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/ft^3(96 to 192 kg/m^3) when tested in accordance with Test Method C 29/C 29M~~/C29M~~ using the shoveling procedure.

5.2.2 Vermiculite shall have a density of not less than 6 nor more than 10 lb/ft^3(96 to 160 kg/m^3) when tested in accordance with Test Method C 29/C 29M~~/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 D 75.

6.3 *Bagged Aggregate*—Obtain from ~~one~~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 ft^3(0.028 m^3). Prepare and test not less than ~~one~~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 riffling to obtain specimens of proper size for individual tests.

7. Test Methods

7.1 *Apparatus*:

7.1.1 *Sieve*—Specification E 11, 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*.

7.1.7 *Deionized Water*.

7.1.8 *Spatula*.

7.1.9 *Weighing Scale*.

7.1.10 *Oven*.

7.1.11 *Desiccator*.

7.1.12 *Mechanical Shaker*.

7.1.13 *500 mL Graduated Cylinder* .

7.2 *Sieve Analysis for Sand*—Use Test Method C 136.

7.3 *Sieve Analysis for Perlite or Vermiculite*—Use Test Method C 136 except as modified as ~~follows.~~ follows:

7.3.1 Use a specimen of 500 mL bulk volume.

7.3.1.1 Measure the volume of each sieve fraction in a 250 mL graduated cylinder. Pour the specimen loosely into the graduate without tamping or shaking. Level the surface with a spatula and read the volume to within ±2 mL.

7.3.2 Express the volumes of the individual sieve fractions as percentages of the sum of the volumes of all fractions.

7.3.3 Calculate the cumulative percentages on each designated sieve by summing the individual percentages of all fractions larger than that sieve.

7.4 *Density of Lightweight Aggregate*~~— Test Method C29/C29M; Use shoveling procedure.~~ — Test Method C 29/C 29M; use shoveling procedure.

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 (15-µm)					100	95