



## Stucco Sand and ASTM C 897 in Florida

Providing a quality stucco job requires the use of quality ingredients, stucco cement, potable water and aggregate (sand). The failure of any one of these ingredients can lead to failures in the plaster coat. Therefore, ASTM developed standards for stucco (Portland Cement-Based Plaster) in the manufacturing, testing and installation of stucco cement, lath and accessories, and aggregates to be applied.

Project Specifications most often reference these standards:

- ASTM C 897, “Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters”
- ASTM C 926, “ Standard Specification for Application of Portland Cement-Based Plaster”
- ASTM C 1063, “Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster”

And sometimes,

- ASTM C 1328, “Standard Specification for Plastic (Stucco) Cement”

It is C 897, the aggregate specification that we need to address. Within C 897 there are significant requirements for the properties of the sand including, but not limited to, the gradation of the sand particles (see Table below) and the Fineness Modulus (FM). This is the area that creates most of the confusion. There are few, if any, naturally occurring sands in Florida that will meet the gradation requirements of the standard.

Of course, natural sand can be modified with the addition of the required gradations of particles; but, this process is extremely costly and time consuming and may not be possible at the local sand sources. This problem has been addressed in C 926 to allow for cases (like in Florida) where meeting the gradation requirements is not practicable. Section 4.4.1 of the application standard, ASTM C 926 states, as follows:

4.4.1 *Sand for Base Coats* – Specification C 926. Aggregates failing to meet the gradation limits in Specification C 897 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.

Additionally, ASTM C 897 addresses the question similarly in Section 6.1.3:

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6.1.3 Aggregates failing to meet only the gradation limits of this specification shall be permitted to be used, provided the supplier furnishes satisfactory documentation to the specifier that the plaster made with the aggregate has an acceptable demonstrated performance record.

The local sand source should be able to provide you with a letter certifying this performance criteria.

<b>ASTM C897 Requirements and Selected Source Samples</b>							
<b>ASTM C897 Stucco Sand</b>			Source A	Source B	Source C	Source D	Source E
Sieve #	Sieve (mm)	Required % Retained	% Retained	% Retained	% Retained	% Retained	% Retained
4	4.75	<b>0</b>	<b>0.1</b>	0	0	0	0
8	2.36	<b>0-10</b>	0.8	0	0	0	0.02
16	1.18	<b>10-40</b>	<b>1.8</b>	<b>0.8</b>	<b>0.2</b>	<b>0</b>	<b>0.67</b>
30	600µm	<b>30-65</b>	<b>2.2</b>	<b>6.0</b>	<b>2.0</b>	<b>0.1</b>	<b>5.42</b>
50	300µm	<b>70-90</b>	<b>3.0</b>	<b>39.9</b>	<b>30.5</b>	<b>11.7</b>	<b>35.48</b>
100	150µm	<b>95-100</b>	<b>42.6</b>	<b>93.6</b>	<b>80.6</b>	<b>83.5</b>	<b>94.74</b>
200	75µm	<b>97-100</b>	<b>83.8</b>	98.8	100	98.8	99.77
Fineness Modulus		<b>2.05 - 3.05</b>	.51	1.4	1.13	0.95	1.36

- **Red** = Out of tolerance

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