



**Corrosion
Engineering™**

AN ERGONARMOR COMPANY

TECHNICAL INFORMATION

CES-337

03/00 SUPERSEDES 02/99

RECOMMENDATIONS FOR PREPARING TEST SPECIMENS AND TESTING OF SILICATE MORTARS

1. GENERAL

- 1.1 The testing of the quality of mortars installed in certain brick lining projects may be required for quality assurance purposes. These projects include the construction of independent brick liners in the chimneys of fossil fired power plants, or in the lining of sulfuric acid plant equipment.
- 1.2 Corrosion Engineering, recommends that ASTM C-579 Method A be used as the standard test method for determining the compressive strength of silicate mortars. This procedure utilizes 1" diameter cylinder specimens instead of 2" cube specimens. Over years of experience, we have found that better test specimens can be prepared and more meaningful and consistent results obtained with less shrinkage and less mass of material to cure.

2. TESTING PROCEDURE

- 2.1 As allowed by ASTM C-579, the following, Corrosion Engineering, recommendations should be followed in performance of the test:
- 2.2 The bottom of Teflon cylinders shall be closed by means of filament tape of appropriate width.
- 2.3 A mix of mortar is made and placed in one or more small plastic bags. The throat of the bag is gathered and tied and a small hole is to be cut in one corner, allowing mortar to be squeezed from the opening as required. A volume of mortar approximately one-fourth to one-third that of the mold is taken on a spatula and carefully worked along the bottom and sides and into the circular "corner" area where tape meets the inside diameter of the mold, Two or three additional increments of mortar are worked into the previous material and along the sides of the mold. All mortar additions are accompanied by tapping the mold to aid settling, and to forestall the formation of air bubbles, Excess mortar is struck off evenly with the top of the mold, using the edge of the spatula.

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- 2.4 Immediately after being made, the mortar specimens shall be covered with polyethylene and remain covered for 3 days. After 3 days, the polyethylene covering and the bottom filament tape shall be removed. On the 6th day after manufacture, the specimens shall be de-molded and dressed by sanding with a fine grade of sandpaper. The side which was exposed to the air usually requires some work while the side which was against the tape seldom does. The intent is to ensure that the end surfaces of the right cylinders are parallel. No acid treatment of the prepared test cylinders shall be undertaken.
- 2.5 Although compressive strength is the most common test used in analyzing the performance of mortars, other physical properties are also important and should be examined when a knowledge of the total performance is required. Test procedures recommended by Corrosion Engineering, are listed below, As with compressive strength testing, specimens should be cured for 28 days at 72°F before any tests are conducted, Shrinkage and flexural strength bases should not be demolded before 48 hours cure.

ASTM C-307	Tensile Strength
ASTM C-413	Absorption
ASTM C-414	Working and Setting Times
ASTM C-531	Shrinkage and Coefficient of Thermal Expansion
ASTM C-580	Flexural Strength and Modulus of Elasticity
ASTM C-321	Bond Strength
ASTM C-177	Thermal Conductivity

3. DISCLAIMER

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is advised to take appropriate steps to be assured that any proposed use of the product will not result in patent infringement.

- 3.2 Please contact Corrosion Engineering for specific recommendations at +1-610-833-4000 or fax +1-610-833-3040.

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