

AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE PRESSURE METHOD (ASTM C231)

Technical Bulletin Overview

This bulletin details recommended modifications to section 6.1 of the ASTM C231 test method when testing concrete with Elemix® XE concrete additive. Directions are given below for determining the additional correction factor when using Elemix additive in type B pressure meters (Image 1). The correction factor corrects for the compression of the Elemix additive particles that occurs during the test, resulting in an increased reading on the pressure gauge.

Modifications to Section 6.1 of ASTM C231:

Step #1: First secure with industrial tape* (Image 2) a portion of a U.S. Standard 18 mesh screen (openings = 1000 micrometers, 0.039 in) to the underside of the Type B pressure meter lid covering the valves and holes so that Elemix XE cannot migrate thru and plug the gauge.

*NOTE: If using industrial tape, it is suggested to apply new tape for each test.

Step #2: When placing the calculated volume of Elemix XE additive in the measuring bowl (section 6.3) do not tap the sides of the bowl or rod the Elemix XE additive. Add the water slowly and agitate the measuring bowl by rocking it gently to allow the air bubbles to escape.

Step #3: Add water until contents are within 1/2 to 1/4 of an inch from the top (Image 3), clamp the lid in place, and finish the test as specified in section 8.3, Procedure – Type B Meter.



Image 1

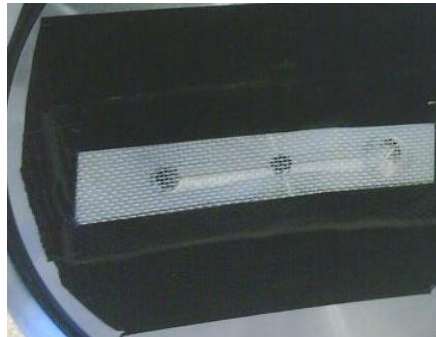


Image 2



Image 3

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Example of Corrected Final Air Reading:

Equation I. Calculation of Air in Concrete Mix (see ASTM C231 equation 5)

$$\text{Total air reading (pressure meter, \%)} - \text{Elemix XE additive correction factor (\%)} - \text{Aggregate correction factor (\%)} = \text{Actual Air content of sample tested (\%)}$$

Table I. Typical Mix Proportions & Correction Factors at Various Elemix® XE Additive Loadings

Plastic Unit Weight lb/ft³ (kg/m³)	140 (2240)	130 (2080)	120 (1920)	110 (1760)	105 (1680)
Elemix® XE Additive Loading lbs/yd³ (kg/m³)	3.5 (2.1)	7.1 (4.2)	10.6 (6.3)	14.1 (8.4)	17.7 (10.5)
Elemix® XE Additive (%Volume)	5.0%	10.0%	15.0%	20.0%	25.0%
Elemix® XE Additive Correction Factor (%Volume)	0.6%	1.1%	1.5%	1.8%	2.1%

NOTE: The concrete densities listed in Table I are approximations. The concrete densities at the specified volume loadings of Elemix XE additive are also dependent upon the producer’s concrete mix design and the specific gravities of their aggregates. This bulletin includes Elemix XE additive in conjunction with normal-weight aggregates only.

Elemix® Concrete Additive

Elemix concrete additive utilizes advanced patented polymer technology to consistently deliver lightweight durable concrete at structural strengths. Available globally, Elemix additive provides concrete designers and manufacturers with an edge over the competition. Elemix additive is suitable for any application where lightweight and durability characteristics are important including; ready mix concrete, elevated decks, toppings, grouts and fills and manufactured concrete products, including block and precast building components.

The use of Elemix additive in concrete is covered by one or more of the following U.S. Patent Nos. 7,644,548; 7,648,574; 7,632,348; 7,658,797; 7,666,258.

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