



# Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete<sup>1</sup>

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## 1. Scope

1.1 This specification covers foaming agents specifically formulated for making preformed foam for use in the production of cellular concrete.

1.2 The function of this specification is to provide the means for evaluating the performance of a specific foaming agent. This is accomplished by using the foaming agent in making a standard cellular concrete test batch (see Test Method C 796) from which test specimens are cast. Then, significant properties of the concrete are determined by tests and compared with the requirements of Section 3.

1.3 The values stated in inch-pound units are to be regarded as the standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

C 796 Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam<sup>2</sup>

## 3. Performance Requirements

3.1 The test batch shall conform to the requirements prescribed in Table 1.

## 4. Test Methods

4.1 The foaming agent being tested shall be used in making the test specimens required.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates, and is the direct responsibility of Subcommittee C09.23 on Chemical Admixtures.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 04.02.

TABLE 1 Physical Requirements

Property	Requirement
Density—The density shall satisfy either of the following:	
Density after pumping (see Method C 796)	40 ± 3 lb/ft <sup>3</sup> (641 ± 48 kg/m <sup>3</sup> )
Oven dry density <sup>A</sup> (see Method C 796)	
For Type I cement	30.4 ± 2.5 lb/ft <sup>3</sup> (487 ± 40 kg/m <sup>3</sup> )
For Type III cement	29.3 ± 2.5 lb/ft <sup>3</sup> (469 ± 40 kg/m <sup>3</sup> )
Compressive Strength (see Method C 796), min	200 psi (1.4 MPa)
Tensile Splitting Strength (see Method C 796), min	25 psi (0.17 MPa)
Water Absorption (see Method C 796), max	25 % by volume
Loss of Air During Pumping (see Method C 796), max <sup>B</sup>	4.5 % by volume

<sup>A</sup> For this comparison, the calculated oven-dry density of the test batch may be determined by assuming that the water of hydration is 20 % of the weight of the cement. Then the oven-dry density =  $\frac{W_c + (0.2 W_c)}{V_{batch}}$ , where  $W_c$  = weight of cement; and  $V_{batch}$  = volume of batch.

For example: using the test batch specified in Method C 796, for Type I cement ( $W_c = 100$  lb;  $W_{TW}/W_c = 0.58$ , where  $W_{TW}$  = total weight of water), the total weight of materials is  $100 + 0.58 \times 100 = 158$  lb (71.67 kg). For a wet density, after pumping, of 40 lb/ft<sup>3</sup> (641 kg/m<sup>3</sup>), the batch volume is  $158/40 = 3.95$  ft<sup>3</sup> (0.11185 m<sup>3</sup>). The calculated oven dry density is then  $(100 + 0.2 \times 100)/3.95 = 30.4$  lb/ft<sup>3</sup> or  $(45.36 + 0.2 \times 45.36)/0.11185 = 487$  kg/m<sup>3</sup>. Finally, the oven-dry density as determined by Method C 796 shall be 30.4 ± 2.5 lb/ft<sup>3</sup> (487 ± 40 kg/m<sup>3</sup>).

<sup>B</sup> The loss of air during pumping includes air that is accidentally entrapped during mixing of the concrete.

4.2 For each of the properties listed in Table 1, the test procedure, the number and type of test specimens, and the method of molding, curing, and testing shall be as described in Test Method C 796.

## 5. Keywords

5.1 cellular concrete; foaming agents

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