



RECOGNIZING EXCELLENCE IN BREWED COFFEE

A PROGRAM OF THE SPECIALTY COFFEE ASSOCIATION OF AMERICA IN COLLABORATION WITH THE EUROPEAN COFFEE BREWING CENTRE

SCAA's Minimum Certification Requirements for Coffee Brewers | January 2014



1. Coffee Volume

The volume of the brew basket must be sized in proportion to the beverage receiver's maximum capacity as stipulated by the manufacturer. *Minimum technical requirement is for brew basket capacity to accommodate the Gold Cup Ratio weight of coffee per maximum capacity (~55 grams per liter) without overflowing from the basket due to the swelling of the coffee grounds during the brew cycle.* This allowance should be about 50% of the bed depth of the coffee. Best results in uniformity of extraction are obtained with coffee bed depths between 2.5 and 5.0 cm, but these dimensions are not a requirement for the certification.

2. Brewing Time

The coffee brewer must be able to cycle its full-capacity water volume through the coffee grounds within the prescribed amount of time. For a brewer at maximum coffee and water capacity, the *minimum technical requirement is for the water contact time with the coffee grounds shall be more than 4 minutes but less than 8 minutes for all brewers operating under standard temperature and pressure at the manufacturers stated design voltage, depending on grind.* Under no circumstances will water contact times in excess of 8 minutes be acceptable in meeting the certification requirements.

3. Brewing Temperature

The coffee brewer must be able to cycle the gross water volume through the coffee grounds within the prescribed temperature range. *Minimum technical requirement is for the water temperature at the point the water contacts the coffee grounds to reach 92°C within the first minute, maintain at least that temperature (92°C) for the remainder of the brew cycle, and never exceed 96°C.*

Measurement of brewing temperatures will be made by using an RTD (Resistive Temperature Device) placed at the top and in the center of the bed of coffee in the brew basket.

4. Beverage Preparation

The coffee brewer must be able to produce a beverage with the prescribed range of solubles concentration and solubles yield. The brewer will be evaluated at stated full capacity as well as at the 1-liter brew water volume. In situations where 1 liter is the maximum capacity of the brewer, the 0.5 liter brew will also be tested. Testing will begin with a coffee/water ratio of 55g/1L, but will be adjusted depending on the grind and contact time to produce a brew within the Gold Cup zone of the brewing control chart.

Minimum technical requirement is for a beverage strength (solubles concentration) of between 1.15% and 1.35% resulting from an extraction (solubles yield) of between 18.0% and 22.0% from the weight of coffee in the brew basket, as determined by a coffee refractometer and brewing control chart. All samples measured on the coffee refractometer are filtered prior to measurement. The grind of the coffee will be adjusted for the water contact time of the brewer in order to achieve these results whenever possible, within the specified grind parameters (see below testing procedures). Brewers must be able to meet these requirements *at both* full capacity and a 1 liter capacity in order to be certified by the SCAA. Brewers with the full capacity of 1 L will also be tested at 0.5 L.

5. Uniformity of Performance

To assure the brewer model is both consistent and reliable, it will be tested for uniformity of performance. For this test, a minimum of 5 coffee brewers will be evaluated. If a brewer manufacturer has never submitted a model to the SCAA before, up to 10 individual brewers may be requested for additional testing. During testing, at least 10 separate brew cycles will be run *on each brewer* to evaluate solubles concentration using the coffee refractometer method and extraction calculated using the Coffee Brewing Control Chart. All samples will be filtered prior to measurement on the coffee refractometer. The coffee brew resulting from these 10 tests *must range between 1.15% to 1.35% solubles concentration for all individual brewers tested. The corresponding range for solubles yield must fall between 18.0% and 22.0%.*

6. Uniformity of Extraction

At a minimum, all of the coffee in the brew basket must be wetted during the first minute of brewing to give opportunity for proper extraction. Brewers will receive a numerical rating based on the average uniformity of extraction factor as determined by the SCAA Uniformity of Extraction Procedures for the weight of coffee at a used for the maximum water volume capacity of the brewer as stated by the manufacturer or to the SCAA Gold Cup Ratio of 55 g/L. The rating number is calculated by comparing residual soluble solids in the outside, middle, and inside areas of the wet coffee grounds in the brew basket. The result is multiplied by 100 to convert the percentage to a whole number.

The Index Rating is 0 - 100, with 100 indicating perfect uniformity of extraction. An average uniformity rating number of 60 would be considered "good," a rating number above 75 would be considered "excellent," and a rating number above 90 would be "outstanding." All ratings below 60 would be listed as "needs improvement" and would result in the brewer not passing SCAA testing and therefore needing improvement for future brewer certification by the SCAA.

7. Beverage Clarity

Excessive sediment in the brewed coffee should be avoided. If sediment is present, the amount of will be measured in the following way: 100 grams of brewed coffee is poured through a filter paper of known weight, which is dried and weighed again. The increase in the weight of the paper is the weight of the sediment. No equipment that produces sediment of more than 75 milligrams per 100 milliliters of brewed coffee will be accepted. *The brewer must produce less than 75 milligrams of sediment per 100 milliliters of brewed coffee to be certified by the SCAA.*

8. Holding Receptacle & Temperature

The container that receives the coffee after brewing must accommodate the quantity of coffee for which the brewing equipment is designed at the maximum water volume capacity designated by the manufacture and maintain the temperature of the brewed coffee at the correct holding temperature. *Minimum technical requirement is for the beverage receiver*

to maintain the temperature of the coffee no lower than 80 degrees C and no higher than 85 degrees C during the first thirty (30) minutes of the holding time. During this time, at no point should the temperature of the coffee increase due to a heating element.

9. **Operating Manuals and other Instructional Materials**

The minimum requirement for certification is that all instructional materials including operating manuals, pamphlets, and promotional items supplied with the brewer. Proper brewing instructions must be included, specifically some suggestion of a coffee/water ratio that results in a Gold Cup brew and cleaning instructions. The SCAA will note errors and propose necessary changes to the brewer manufacturer. A brewer submitted for testing will not be considered ready for SCAA certification before these matters are resolved.

Testing Procedures

a. **Batch Size**

All brewers are tested at full capacity and 1 L water volume (with $15\pm 5^{\circ}\text{C}$ water). If the brewer's maximum capacity is 1 L, 0.5 L will also be tested.

b. **Coffee**

Evaluations of minimum technical requirements in beverage preparation will be made using coffees in the medium roast color range (SCAA #55 roast color tile). In addition beverage evaluations will also be made using coffees in the dark roast color range (SCAA #35 roast color tile). Coffees with an approximate age of 1-1.5 weeks off-roast will be utilized to assure consistent brewing.

c. **Grind**

All testing will commence with the above coffees ground to a common particulate distribution chosen to systematize the testing process. This grind distribution will have less than 17% (by weight) of the grinds above 1168 μm in size, at least 65% of grinds falling between 589-1198 μm , and 18% or less being smaller than 589 μm . This is close to but not replicating

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the ECBC grind distribution for testing, due to regional differences in market norms. See the table below for further specification.

ECBC Grind for Brewer Testing		SCAA Grind for Brewer Testing	
Size Range (μm)	Percent (%) by weight	Size Range (μm)	Percent (%) by weight
>850	≤ 12	>1168	≤ 17
425-850	≥ 68	589-1168	≥ 65
<415	≤ 20	<589	≤ 18

d. Water

Fresh, cold water 15 ± 5 degrees Celsius ($^{\circ}\text{C}$), containing a baseline dissolved mineral content of 150 ppm (0.150%) with a tolerance of 20 ppm (+/- 0.20%), of which a sub-set of hard minerals is 17 mg/L - 85 mg/L calcium hardness, and a pH of 7.0 (+/- 0.5) will be used in all of the brew testing.

e. Coffee to Water Ratios

Evaluations of minimum technical requirements in beverage preparation will be made using the nominal weight of coffee specified by the SCAA Coffee Brewing Control Chart (55 grams of coffee per liter of $15\pm 5^{\circ}\text{C}$ water) for the actual maximum water volume rating of the brewer, as specified by the manufacturer. In addition beverage evaluations will be made using 1 liter of water, with the same coffee/water ratio.

f. Water Supply

For plumbed-in units, the water pressure will be controlled by a pressure regulator to maintain the minimum pressure designated by the manufacturer.