Specialty Coffee Association

SCA Standard 102-2024

Coffee Value Assessment:

Sample Preparation and Tasting Mechanics

SCA Coffee Product Standard

Contents

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The SCA would like to thank the nearly 800 individuals and businesses who participated in the Coffee Value Assessment's Early Adopter program, the trainers and attendees of the CVA for Cuppers course hosted around the world, and CVA Ambassadors: their use of and feedback on the different assessments was key to producing these standards.

Coffee Value Assessment: Sample Preparation and Tasting Mechanics

1 Preface

Specialty coffee (see definition in section 4) acquires value because of its attributes, whether intrinsic (related to the material reality of a coffee) or extrinsic attributes (the informational or symbolic attributes of coffee). Sensory attributes, or the sensory perceptions of coffee or the coffee experience, are a special class of a coffee's intrinsic attributes because of their relevance to consumers and the specific methodologies required for their measurements. Sensory attributes are gathered and interpreted through sensory methodologies.

The term cupping refers to a method for the sensory assessment of coffee that involves tasting several cups per coffee sample, using a different set of coffee beans for each cup, which is ground and brewed independently. Cupping—with individual brewing of each cup—has become the widely accepted technique within the industry for affective assessment.

Cupping is not the only method that may be used to assess a coffee's sensory attributes. For some applications, including the case of descriptive assessment of green coffee, other brewing methods may be used during sample preparation.

This standard therefore covers the "mechanics" aspect of both cupping and brewing for tasting. As cupping is a technique designed to assess green coffee lots, green coffee needs to be roasted, ground, and brewed (sample preparation) in order to taste it. This brewing method allows for coffee to be assessed along different steps or "sections" of the process. Though the approach to assess coffee along the different sections can look very different in descriptive and affective assessments, the different cupping steps usually remain the same, which is why sample preparation and tasting mechanics for both modalities are covered by this standard.

This standard supersedes the following Heritage SCA Standards:

- Coffee to Water Ratio for Cupping
- Cupping Water Temperature
- Cupping Water
- Grind for Cupping
- Roast for Cupping
- Roast Level for Cupping
- Cupping Room Size
- Cupping Spoons
- Cupping Tables
- SCA Cupping Protocol (2004 and any later editions)

2 Scope

This standard has been designed to assess green *Coffea arabica* and is meant to be used in conjunction with the other standards in this series (see section 3, Normative References). It may be adapted to assess states of the coffee product other than green, such as parchment, dried cherry, roasted, and even brewed coffee. For example, in instances where the descriptive assessment is used to characterize a roasted coffee product, the roasting step does not apply. It may also be adapted to the assessment of other *Coffea* species.

This standard has also been designed to offer the assessor ample opportunities to explore a coffee's sensory attributes thoroughly, for the purpose of value discovery. However, the level of detail required to yield rich and detailed information about the coffee's sensory attributes implies that abbreviated cupping of many samples per session for quality control or quick decision-making purposes is outside the scope of this protocol. Again, although some areas of this standard may be adapted to rapid assessment purposes, such adaptations are not described here.

Although this standard describes the methods to prepare a green coffee sample for tasting, and the mechanics to taste the coffee sample in order to cover the different sections of the coffee sensory experience, the actual assessment—how the different attributes are rated, described, or judged—is outside the scope of this standard and is covered by other

standards of this series, namely *SCA Standard 103-2024 Coffee Value Assessment: Descriptive Assessment*, and *SCA Standard 104-2024 Coffee Value Assessment: Affective Assessment*. The use of the resulting sensory information in conjunction with that from other assessments for purposes of value discovery is covered in *SCA Standard 610 Coffee Value Assessment: System Operation* (in preparation at the time of publishing).

The terms defined here (section 4) are limited to those required to implement this standard. There is a more comprehensive vocabulary related to the Coffee Value Assessment available online.

3 Normative References

SCA Standard 103-2024 Coffee Value Assessment: Descriptive Assessment

SCA Standard 104-2024 Coffee Value Assessment: Affective Assessment

SCA Standard 610 Coffee Value Assessment: System Operation (in preparation)

4 Terms and Definitions

4.1 General Terms

Attribute(s). A property that is characteristic of something; a quality or feature regarded as a characteristic or inherent part of a coffee. A product (or coffee) can be thought of as a collection of attributes. Well-defined attributes can be identified using a variety of methods.

Affective assessment. A sensory assessment, described in *SCA Standard 104-2024 Coffee Value Assessment: Affective Assessment,* which focuses on discovering the impression of quality of a coffee.

Combined assessment. A sensory assessment where both descriptive and affective assessments are done in parallel, but separately for each section.

Descriptive assessment. A sensory assessment, described in *SCA Standard 103-2024 Coffee Value Assessment: Descriptive Assessment,* which focuses on profiling and characterizing the sensory attributes of coffee objectively.

Specialty coffee. A coffee or coffee experience that is recognized for its distinctive attributes and, because of these attributes, has significant extra value in the marketplace.

Tasting. A general term meaning the sensory assessment of a product using all senses but specifically involving the senses of smell and taste. In coffee, the term "tasting" encompasses cupping and other forms of tasting, such as tasting coffee from a batch brew.

4.2 Coffee Sample Preparation and Tasting Terms

Cupping. A method for the sensory assessment of coffee, which involves tasting several cups per coffee sample, using a different set of coffee beans for each cup, which is ground and brewed independently. The purpose of a cupping may be to do a descriptive assessment or an affective assessment.

Cupping level roast. The roast degree to which green coffee is taken through roasting for assessment purposes under this standard. See 5.1.1.

Cupping step. Each of the three main activities carried out during a cupping: fragrance assessment, brewing, and liquoring. Each step assesses one or more cupping sections. See 6.

Cupping section. Each of the categories that integrate the coffee tasting experience and are assessed during a cupping, from either the descriptive or the affective point of view. See 4.4.

Brewing. In the cupping method, to add hot water to the coffee grounds in each cup individually at a specific coffee-to-water ratio, and let it infuse for about three minutes, prior to "breaking the crust." See 7. In batch brew methods, brewing refers to coffee extraction, using the technique specific to each brewing technology, and applying the brew parameters described in 5.3.

Brew. The coffee beverage or coffee infusion after brewing.

Breaking the crust. The act of stirring the "crust" or "dome" of coffee slurry usually formed on the top of the cup during brewing, as one of the steps to ready the cup for liquoring.

Skimming. The act of removing the floating grounds, foam and oils that remain on the surface of the brew after breaking the crust, to ready the cup for liquoring.

Liquoring. The act of tasting the brew several times as it cools down, to assess the cupping sections corresponding to the coffee experience inside the mouth. This is usually done by slurping the brew from a spoon, assessing it in the mouth, and then ejecting the brew from the mouth. See 6.3.

Roasting problem. A deviation from the roasting method that happens when roast batches do not fall in the desired roast level range or have undergone "too fast" or "too slow" roasting. Roasting problems yield samples presenting underdeveloped, burnt, or baked characteristics, which have a potential sensory impact on the coffee's flavor and impression of quality, introducing noise to the test.

"Too fast" roasting. A roasting problem, due to excessive heating rate.

"Too slow" roasting. A roasting problem, due to insufficient heating rate, which will result in the so-called "baked" bean.

4.3 Sensory Terms

Gustative/Gustatory. Referring to the sense of taste, just as "visual" refers to the sense of sight and "olfactory" to the sense of smell.

Olfactive/Olfactory. Relating to the sense of smell.

Orthonasal. One of two entryways of odor molecules into the human olfactory epithelium, the orthonasal passageway is through the nose, as we breathe in, and is how we pick up the odor from the environment.

Retronasal. One of two entryways of odor molecules into the human olfactory epithelium, the retronasal passageway is from the back of the mouth cavity, as we breathe out, and is how we pick up the olfactory component of flavor.

Tactile. Referring to the sense of touch. For the purpose of this standard, it refers to the "mouthfeel" or tactile sensations within the mouth in response to the coffee stimulus: thickness (viscosity), texture, pungency, etc.

4.4 Cupping Sections

Cupping sections are aspects of the coffee tasting experience. These aspects are split into parts, either along time or based on the different sensory modalities involved, for the purpose of analysis.

Fragrance. The orthonasal olfactory perception of the coffee grounds prior to brewing (i.e., the smell of the coffee grounds). See 6.1. Assessed in step 1: fragrance assessment.

Aroma. The orthonasal olfactory perception of the coffee brew, assessed at two moments: right after brewing and while the crust is broken (i.e., the smell of the brew). See 6.2. Assessed in step 2: brewing.

Flavor. The perception coming from both the taste of the brew and the brew's retronasal olfactory component, while the brew is in the mouth. It is perceived as a single "flavor" impression, as the brain combines the different sensory inputs. See 6.3. Assessed in step 3: liquoring.

Aftertaste. The perception coming from both the taste and the retronasal olfactory component caused by the remnants of the brew inside the mouth and throat, after the brew has been ejected or swallowed. It is perceived as a single impression, as the brain combines the different sensory inputs. See 6.3. Assessed in step 3: liquoring.

Acidity. The perception of sour taste provoked by the brew, which may vary in intensity and character. See 6.3. Assessed in step 3: liquoring.

Sweetness. The perception of gustatory or retronasal sweetness provoked by the brew. See 6.3. Assessed in step 3: liquoring.

Mouthfeel. The tactile perception of the brew while it is in the mouth, excluding the temperature perception. It encompasses the brew's weight and viscosity, its texture, and other tactile properties such as astringency (mouth-drying property). See 6.3. Assessed in step 3: liquoring.

Overall. Referring to the affective assessment, this is the general impression of quality of a coffee, including aspects not covered in the other sections, such as balance and personal preference. Assessed at the end of a cupping, to account for the whole tasting experience. See *SCA Standard 104-2024 Coffee Value Assessment: Affective Assessment*.

Uniformity. Referring to the affective assessment, where it is rated as number of non-uniform cups, this is an indicator of the coffee lot's homogeneity. Assessed in step 3: liquoring. See *SCA Standard-104-2024 Coffee Value Assessment: Affective Assessment*.

Defect. A sensory characteristic (usually a flavor) broadly considered as undesirable in coffee or at least by large industry consensus. See *SCA Standard 104-2024 Coffee Value Assessment: Affective Assessment*.

5 Sample Preparation

Sample preparation encompasses the steps needed to bring the green coffee to a state where it's ready to be assessed and brewed. This includes roasting, weighing, and grinding.

5.1 Roasting

The roasting step implies subjecting the coffee beans to a thermal treatment to bring about different physical and chemical changes in the bean and ultimately develop the coffee flavor. General guidelines regarding sample roasting are given here.

Sample roasting shall achieve the desired roast level while avoiding "roasting problems," and keeping roasting conditions and parameters as even as possible for all samples. Different roasting technologies and roasting conditions may be used, as long as this purpose is accomplished.

5.1.1 Roast Level

The roast level should be controlled through colorimetry (e.g., CIELAB or Agtron/SCA Roast Color Classification System), or through infrared spectrometry (e.g., Agtron device). Alternative methods for roast level control, such as dry matter loss, or volume increase of the coffee bean, may be used if correlations with colorimetry or spectrometry have been established. The roast level for specialty coffee cupping should be what has mostly been described as "medium." If, for whatever reason, the coffee is cupped at a roast level other than medium, or any other deviation from this standard occurs, such deviation shall be reported to all parties involved.

For the purposes of this standard, cupping level roast shall be defined in colorimetry terms as lightness of the ground coffee (L* in the CIELAB coordinates) of 26–29 (corresponding approximately to **Agtron/SCA Roast Color Classification System tile #65)**.

In roast-meter terms, cupping level roast shall be defined as a target reading of 63 in the Agtron "Gourmet" scale or its equivalent in other roast meters. When using roast meters, parameters such as the grind level and the coffee temperature should be controlled. It should be considered that samples with a lot of chaff will show a larger error.

5.1.2 Avoiding Roasting Problems

Assuming the roast level of the coffee falls within the targeted range, roasting "problems" should be avoided. The two most common roasting problems happen when roasting is either too fast or too slow (compared to the "optimum" roasting rate given by a specific roasting technology).

Roast batches that do not fall in the desired roast level range or that present underdeveloped, burnt, or baked characteristics should not be used for cupping, and the roast batch should be repeated.

5.1.3 Consistency and Other Considerations

The effect of roasting on the variability of coffee flavor shall be minimized, so that flavor variability is due to the variations among green coffees and not due to the differences in roasting conditions. All roasting parameters should remain as constant as possible from sample to sample.

The coffee sample shall be immediately air-cooled (without water quenching). When they reach room temperature (approximately 20°C), completed samples should then be stored in airtight containers or non-permeable bags until cupping. Samples should be stored in a cool, dark place.

Coffee should rest for 8 to 24 hours after roasting. If the cupping cannot take place at 8 to 24 hours after roasting, measures should be taken to minimize flavor degradation.

5.2 Weighing and Grinding: Affective Assessment

For the affective assessment (see *SCA Standard 104-2024 Coffee Value Assessment: Affective Assessment*), the *cupping* method shall be used. Five cups per sample shall be tasted.

5.2.1 Cupping Vessels

Cupping vessels shall be of tempered glass or ceramic material. They shall be between 200 mL and 350 mL, with a top diameter of between 75 mm and 90 mm. All cups used shall be of identical volume, dimensions, and material of manufacture.

5.2.2 Coffee Dose per Cup

The mass of coffee beans to be used per cup is determined by the total volume of the specific cup model. The volume of the cupping vessel to the rim shall be determined to calculate the mass of coffee to be used. This may be measured by weighing out the mass in grams of room-temperature water held by the vessel when it is filled to the rim, and approximate the volume using a density of 1 g/mL water.

Once the cupping vessel volume is measured, the mass of coffee per cup is calculated at a ratio of 8.25 g of coffee per 150 mL of vessel capacity. The beans for each cup shall be weighed separately, using a scale with 0.1 g or higher accuracy. Because of the mean mass of a coffee bean, a tolerance of ±0.2 g in the final mass of coffee per cup shall be considered.

5.2.3 Grinding

The sample shall be ground as close to the cupping time as practical.

Each cup shall be ground separately. The coffee used for cupping shall be ground so that 70–75% of the grinds pass through the 20 US standard mesh sieve (850 µm aperture); this is slightly coarser than typically used for paper filter drip brewing. The person preparing the samples should adjust the grinder at the required grind prior to grinding the coffee for a session, and grind a small amount of a new sample into a cup to displace coffee grounds from prior samples from the grinder.

5.3 Weighing and Grinding: Descriptive Assessment

The descriptive assessment (see *SCA Standard 103-2024 Coffee Value Assessment: Descriptive Assessment*) does not assess coffee's uniformity. For that reason, the cupping approach is not required for the descriptive assessment. If the cupping method is used, samples shall be ground and brewed following 5.2 but using 3–5 cups per sample.

Batch brewing, using either filter brewing or French press, may be used for the descriptive assessment. In that case, a brew ratio of 55–60 g of coffee per liter of water (approximately 17:1 to 18:1 water-to-coffee ratio) should be used, unless the descriptive assessment is used for specific brewing applications outside of this range. The grind should be specific to the brewing method chosen (e.g., French press). A small amount of dry coffee grounds from each sample shall be kept aside for tasters to assess the coffee's fragrance.

6 Cupping Steps and Sections

Regardless of the type of assessment (descriptive or affective), similar steps and sections are followed as the coffee is brewed and assessed. This text section describes the cupping steps for the affective assessment and how they can be adapted for batch brewing in the case of the descriptive assessment. The cupping *steps* are operations followed during the cupping procedure, while the cupping *sections* are abstract categorizations of the sensory perceptions along the cupping procedure (e.g., "fragrance"), in order to break down the whole sensory experience into smaller sections that can be better analyzed.

6.1 Step 1 – Prior to brewing, and *fragrance* assessment

6.1.1 In Cupping

As soon as it is practical, the *fragrance* of the samples shall be evaluated by sniffing the dry grounds. The odor of the dry coffee grounds from each cup is assessed. This odor of the dry grounds is the *fragrance* section, which is purely olfactive. Cuppers may or may not shake the cup while assessing fragrance, according to their preference.

6.1.2 In Batch Brew for Descriptive Assessment

In the case of descriptive assessment where coffees have been batch brewed, a separate cup or tray with the dry grounds shall be made available for tasters to assess the fragrance.

6.2 Step 2 – Brewing and *aroma* assessment

6.2.1 In Cupping

Immediately following fragrance assessment, the coffee shall be brewed (see 7). Hot water shall be poured to the rim of each coffee, which causes a "dome" or "crust" of coffee and water slurry to be formed on top of each cup. The aroma of the undisturbed crust shall be assessed, and the crust shall be left unbroken for 3-5 minutes. Breaking of the crust should be done by stirring the crust approximately three times, while the vapors released by this motion are sniffed and assessed. Both assessments (of the unbroken crust and during the break) constitute the *aroma* section, which is also purely olfactive.

Starting at the crust break and throughout the whole cupping, spoons shall be rinsed in hot water before they touch the brew in any cup.

When there is more than one cupper assessing the coffee sample, cuppers should split the cups among themselves, so that different cuppers can have the chance to break at least one cup's crust from as many samples as possible. Each cupper may assess aroma from each of the broken cups before skimming to complete the aroma assessment.

Once all the cups' crusts on a table have been broken, the grounds and oils on the surface of each cup shall be skimmed, using one or two spoons. The grounds and oils are discarded.

6.2.2 In Batch Brew for Descriptive Assessment

In the case of descriptive assessment, if batch brewing is used, each taster may receive a cup or, alternatively, several tasters may "cup" from the same set of batch-brewed cups. At any rate, there is no crust-aroma assessment and no crust breaking when batch brew is used, though the aroma should still be assessed from the freshly brewed coffee.

6.3 Step 3 – Liquoring rounds as the brew cools down

6.3.1 In Cupping

After each cup has been skimmed, the brew should be allowed to cool to about 70°C before "liquoring" begins. "Liquoring" means assessing the brew in the mouth, for which a spoonful of brew from each cup should be slurped into the mouth in such a way as to cover as much area as possible, especially the tongue and upper palate. The brew shall be assessed in the mouth regarding the different cupping sections, and it should then be ejected from the mouth, to avoid swallowing too much caffeine in a cupping session. Different rounds of liquoring (at least three) should be done to assess the different cupping sections as the coffee cools down below body temperature. The following sections shall be assessed during this step:

a. *Flavor* is the composite perception coming from the brew's gustative and retronasal olfactory perceptions, while the brew is held in the mouth. It has, thus, a gustative and a retronasal dimension.

b. *Aftertaste* is the composite perception of gustative and retronasal olfactory perceptions coming from the brew's residues in the body once the brew has been ejected from the mouth (or swallowed). It has, thus, a gustative and a retronasal dimension, as well as a length in time.

c. *Acidity* refers to the gustative perceptions structured around the brew's sourness.

d. *Sweetness* refers to the gustative and/or retronasal perception of sweetness in the brew.

e. *Mouthfeel* refers to the tactile feel of the brew, comprising its thickness (viscosity), texture, and other tactile sensations, such as astringency (mouth-drying sensation).

f. *Overall* refers to the holistic perception of the coffee, as a combination of all prior sections.

6.3.2 In Batch Brew for Descriptive Assessment

When batch brewing is used for descriptive assessment, tasters may liquor the coffee from one or more cups. Keeping the technique of slurping from a spoon is recommended (unless the brew is swallowed), to facilitate retronasal perception. All the cupping sections described in 6.3.1 shall be assessed in this step.

7 Brewing and Cupping Mechanics

This section describes brewing and cupping mechanics in the cupping method. A cupping session involves the cupping of several coffee samples (usually 3–6) arranged on a table, where each sample is cupped following the steps in 6. All coffee samples on the table shall be brewed and cupped *in parallel*, which means step 1 is done for all the coffees on the table, next step 2, and finally step 3.

7.1 Cupping Tables

Cupping tables (for six people) should have a surface of at least 0.90 m^2. Cupping tables shall be a comfortable height for cuppers. The cupping table shall be stationary, and cuppers shall move around the table.

7.2 Coffees per Session

The maximum number of coffees per session should be 6. At 6 coffees per session and 6 cuppers per table, each cupper gets to be in front of a sample, while other cuppers are tasting the other samples. Cuppers using the combined form should reduce the number of coffees per session, to allow time for the more thorough assessment.

7.3 Brewing

All the coffees in a session should be brewed at the same time, with each cupper pouring water in one sample's cups using one carafe per person. If the cupping lab does not have enough carafes or enough cuppers to brew all coffees individually, there should be at least one large carafe for every three coffees. All the cups of each coffee shall be brewed in sequence. Using a spouted carafe, water at 93 ± 3ºC shall be poured into each cup to the rim, gently creating turbulence as the water is poured. It is important to fill up to the rim, as the vessel's capacity is calculated to the rim. A "dome" or "crust" of coffee and water slurry will be formed during brewing. If there were errors during the brewing process and some cups are short of volume, some extra water may be added to those cups after the crust has been broken, to adjust to the same volume of the other cups.

7.4 Water for Brewing

Whenever possible, water for cupping should comply with the specifications in the "acceptable range" column of Table 2.

Table 2: Specifications of Water for Cupping.

Characteristic	Acceptable Range
Chlorine	None
Calcium Hardness	50–175 ppm $CaCO_3$
Alkalinity	At or near 40–70 ppm $CaCO_3$
pH	6–8

7.5 Cups per Sample

For the descriptive assessment, if the cupping method is used, any number between three and five cups per coffee may be used. The number of cups may be determined by the number of cuppers tasting on each table and the size of the cupping vessels: more cuppers require more volume of brew, which may be provided in larger vessels or a larger number of cups. When batch brewing is used for the descriptive assessment, one cup of coffee of each sample may be given to each taster.

For the affective assessment, five cups per coffee (per table) shall be used so that the "uniformity" category can be evaluated consistently.

7.6 Modified Protocol for Sanitary Reasons

Cuppers may choose to modify the protocol to avoid direct contact of the brew with each cupper's mouth. To do this, spoons should not be used to liquor the coffee from the cupping vessel. Instead, each sample has a designated spoon, which is used to transfer the coffee from the cupping vessel to a personal vessel (another spoon or a shot glass), from which the cupper would slurp the sample.

Regardless of cuppers using the regular or the modified protocol, the spoon shall be rinsed in hot water every time, before being dipped in each cupping vessel.

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