



# COFFEE BASICS

The Elements of Proper Brewing and  
Creating an Ideal Coffee Drinking Experience

# THE ELEMENTS OF PROPER BREWING

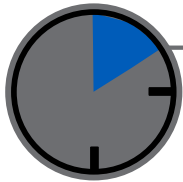


## WATER

Fresh, good-tasting water is essential since it makes up more than 98 percent of a cup of coffee. Mineral content can affect taste. For best results, water should never be artificially softened and should not exceed the following parts per million (ppm) of dissolved minerals:

- **Ideal** – 50-100 ppm (50-100 mg/L) or 3 to 6 grains of hardness
- **Acceptable** – Below 300 ppm (300 mg/L) or 18 grains of hardness

BUNN offers a complete line of commercial-grade water quality filtration systems for use with BUNN commercial brewing equipment to ensure customers are getting the best tasting beverage possible.



## TIME

The brewing time, or the time water is in contact with coffee grind, determines the amount of coffee material extracted. This is the major component affecting flavor.

Contact/brew time should never exceed 8 minutes.



## TEMPERATURE

The temperature of the water during brewing affects flavor and extraction.

- **Ideal Water Temperature** – 92° - 96°C

Higher temperatures may result in undesirable coffee flavor and lower temperatures will result in poor extraction.



## TURBULENCE

Turbulence is created as the water passes through and over the coffee. It should cause the particles to separate and create a uniform flow of water around them for proper extraction.



## FILTRATION

Paper filters produce the clearest cup of coffee. BUNN filters are:

- Porous enough to allow free flow of the extracted coffee solubles.
- Perfect for coffees requiring exact brewing, like decaf and flavored coffees.
- Strong enough to prevent collapsing.

The paper stock used in manufacturing BUNN filters is produced using an elemental chlorine-free method.



## CLEANLINESS

Make sure everything related to coffee brewing and serving is clean and free from lime and hard water deposits. Specifically, assure the following are spotlessly clean:

- **Serving area**
- **Sprayhead/Funnel**
- **Servers**
- **Water Reservoir/Pitcher**

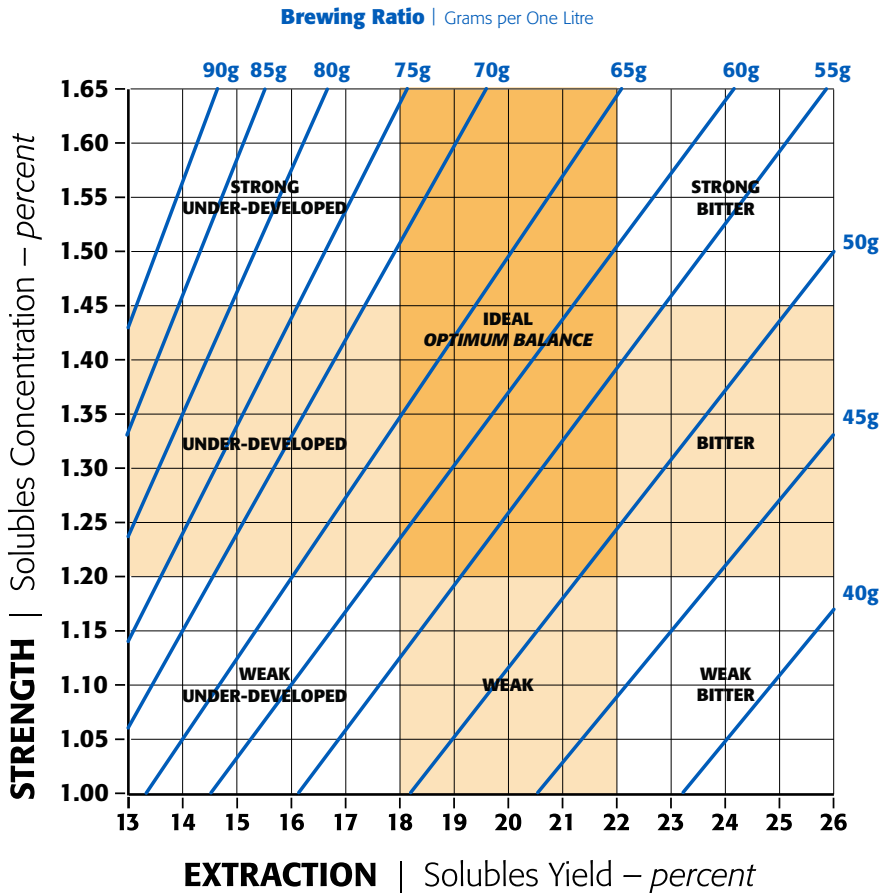
Never clean with a steel wool or other abrasives which can cause flaking or scratching which can lead to further pitting, corrosion and deposits.



# THE TECHNIQUE OF BREWING CONTROL

## COFFEE BREWING CONTROL CHART

According to this chart developed through years of research and testing and now used by the Specialty Coffee Association of America, every great cup of coffee has three important variables—strength, extraction and brewing ratio. By plotting the relationship between these factors, it is possible to produce the ideal coffee flavor and drinking experience.



### Brewing Ratio

The red diagonal lines represent brewing ratios of ground coffee used per half-gallon of water. The ground coffee measurements are displayed in ounces across the top and down the right side of the Chart.

### Strength (Solubles Concentration)

The left side of the Chart indicates strength as a percentage. Other Control Charts may include total dissolved solids (TDS). The ideal percentage of coffee flavoring material in the finished cup is 1.15% to 1.35%, and is most accurately measured by a Brew Strength Meter, hydrometer or refractometer.

### Extraction (Solubles Yield)

Approximately one-fourth to one-third of a roasted coffee bean is matter that will readily dissolve in water during the brewing process. The other portion is bean fiber that isn't soluble during normal brewing. The bottom of the Chart converts the fraction of the original dry ground coffee that has ended up in the finished cup to a percentage. The ideal range is 18% to 22% of the solubles. Grind size and brew time play a critical part in extraction.

### Optimum Balance

Balancing strength and extraction produces a standard designated as “Golden Cup” by the Specialty Coffee Association of America.

### USING THE CHART

By using the weight of ground coffee in the brew basket, the volume of water used, and the strength of the brewed coffee, you can plot these to determine the extraction. The objective is to get to the Optimum Balance area. If you use 55g of coffee and the strength of the brew was determined to be 1.50%, follow the red line labeled 55g down the red diagonal to the 1.50% grid line, and then straight down vertically to the bottom of the chart to extraction which is approximately 23.5%. This coffee is **STRONG / BITTER**. To move the brew outcome, the extraction needs to decrease and fall within 18% - 22% by decreasing the brew time and/or increasing the grind size.

# BUNN TECHNOLOGY GIVES YOU CONTROL

We manage the science of brewing so you don't have to. BUNN offers a line of precision brewing and serving systems that are designed to produce optimum flavor.

**The machine matters!**

Equipment featuring Digital Brewer Control™ gives the operator control of the brewing process to create a variety of coffee recipes from a single origin of bean, or perfect recipes for different blends of beans.

### **Pre-infusion: Control over the wetting process**

The sprayhead dispenses hot water and then turns off, allowing the wetting phase to complete. Pre-infusion ensures that the coffee will be ready for the extraction phase when the sprayhead turns back on.

### **Pulse brew: Control over the extraction phase**

The sprayhead dispenses hot water then goes through a cycle of turning off and back on. Pulse brew enables you to adjust the flavor of your coffee by extending brew times.

### **Variable Bypass: Control over brew strength**

Bypassing a percentage of the water around the ground coffee allows you to create unique flavors.

### **Digital Temperature: Control over brew temperature**

With Digital Brewer Control, you have the option to set the brewing temperature precisely where you want it. The low temperature brew lock-out feature ensures adequate water temperature.

### **Extraction Systems: Control over water distribution**

From traditional BUNN sprayhead designs to the BUNN 21-hole sprayhead, you can choose the spray pattern that yields the ideal flavor for your taste profile.

*See other BUNN programming features  
on the back panel*

## HOLDING AND SERVING KNOW HOW

Brewed coffee should be enjoyed while flavor and aroma are at their peak. BUNN offers a range of holding and serving equipment designed to keep your coffee at its best.

### **Ideal holding temperature: 80°F to 85°C**

Most volatile aromatics in coffee have boiling points well below that of water and continue to evaporate from the surface until pressure in the serving container reaches equilibrium. A closed container can slow the process of evaporation.

### **Ideal serving temperature: 80°F to 85°C**

Volatile aromatics in coffee are not perceived when coffee is served at lower temperatures.

### **Ideal holding time: 20 minutes in an open top decanter / 60 minutes in a closed container**

Holding coffee longer will result in loss of the smooth, sweet and complex flavors and instead produce a scorched or bitter taste.



# COFFEE TERMS

The process of running hot water through coffee removes various materials from the grind. Those materials are:

**Soluble Materials:** Compounds that dissolve in water.

**Non-soluble Materials:** Compounds that do not dissolve in water.

**Volatiles:** Soluble materials that evaporate easily.

**Non-volatiles:** Soluble materials that do not evaporate, but stay in solution.

The terms used to describe the characteristics of the coffee drinking experience are:

**Fragrance:** Sometimes confused with aroma, this is the smell of ground coffee before the addition of water.

**Aroma:** The gases that evaporate as ground coffee is exposed to water.

**Flavor:** The liquids that are responsible for the overall taste of coffee.

**Acidity:** The taste of coffee that creates differing sensations on certain areas of the tongue.

**Body:** The solids that determine the way coffee feels in your mouth.

**Aftertaste (or Finish):** The lingering remnant of taste after the coffee is swallowed that often changes over time.

## BUNN PROGRAMMING FEATURES

**BrewLOGIC®** Easy programming compensates for flow rate variations to ensure consistent dispense levels when water quality is a consideration.

**BrewWISE®, Smart Funnel® and Smart Hopper®** Features RFID communications between grinder, funnel, and brewer, managing the brewing process from start to finish consistently and without error.

**BrewWISE® Recipe Writer** Unique information storage and transfer media dramatically reduces brewer programming times and input errors.

**BrewMETER®** Simplifies pulse brew and allows extraction manipulation with the touch of a button.

**BrewWIZARD®** Easy access to the most used setup parameters, including a lock-out feature to prevent brewing if the water is less than ready temperature

**SmartWAVE®** A BUNN exclusive design that uses technology to increase turbulence in the brew funnel, providing more contact time between water and coffee and uniformity of extraction.

**Others include:** Language/Units, Temperature, Freshness Timer, Advertising, Sanitation Timer, Recipe Cards, Service & Asset Numbers, and Brew Counters